

**BEST AVAILABLE COPY**

Docket No.: RIC96161

**THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): Haberman et al.

Confirmation No.: 7536

Serial No.: 09/002,187

Art Unit: 2152

Filed: December 21, 1997

Examiner: T. Vu

Title: System and Method for Establishing a Virtual Circuit in an ATM Network

**RECEIVED**

**OCT 11 2005**

**Technology Center 2100**

**FOURTH STATUS INQUIRY REGARDING  
PETITION TO WITHDRAW WRONGFUL HOLDING OF ABANDONMENT**

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Sir:

This is Applicants FOURTH request for the status of the Petition to Withdraw Holding of Abandonment Under 37 CFR 1.181(a). Please advise us in writing as to the status of the above-noted application.

Applicants filed a Petition to Withdraw Holding of Abandonment Under 37 CFR 1.181(a) on May 10, 2001, and have not yet received a decision on the Petition. Applicants received a telephone call from Jim Alexander (P/OPPD; (703)305-8387) indicating that the official USPTO file was lost. Applicants believe that this may be hindering the decision on the Petition, so Applicants filed a copy of Applicants' file history on September 26, 2003. However, Applicants still have not yet received any type of action in this case.

October 4, 2005, Applicants reviewed the Patent Application Information Retrieval system (PAIR) for the current status on the above-noted application (copy included). Under the File History, there is an entry for "12-09-2004: Mail Reconstruction Notice." However, Applicants submit that the Notice was never received, and hereby petition to have any statutory deadlines restarted.

To expedite the reconstruction of the file, review of the Petition to Withdraw Wrongful Holding of Abandonment and issuance of the application as a patent, Applicants have submitted herewith a true copy of the file history.


The undersigned attests that a search of the file jacket and docket records indicates that the Notice of Reconstruction was never received. Evidence that the Notice mailed on December 9, 2004, was never received is provided in the form of a copy of the docket record showing December 9, 2004, through March 9, 2005 (three months from the date of the action), where the non-received Notice would have been entered had it been received and docketed is attached to this statement.

Applicants therefore petition for withdrawal of the holding of abandonment in the above-identified application under 37 C.F.R. §1.181(a).

According to 37 C.F.R. §1.181(d) and M.P.E.P. 711.03(c), Applicants believe that no fee is due. However, should the Commissioner deem a fee due in connection with this paper, please charge any shortage in fees, including extension of time fees, to Deposit Account 13-2491 and please credit any excess fees to such deposit account.

Should anything further be required, Applicants request that the undersigned be contacted at the telephone number indicated below.

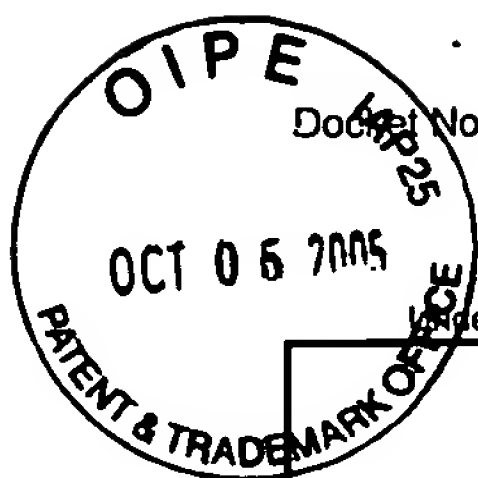
Respectfully submitted,



Eden U. Stright  
Registration No. 51,205

Date: October 4, 2005

MCI, Inc.  
1133 19<sup>th</sup> Street, NW  
Washington, DC 20036  
Phone: 202 736-6008  
Fax: 202-736-6382



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**OCT 11 2005**

**Technology Center 2100**

## Certificate of Mailing under 37 CFR 1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

October 4, 2005

on \_\_\_\_\_  
Date

*Marlyn S. Holt*

Signature

Marlyn Holt

Typed or printed name of person signing Certificate

202.736.6749

Registration Number, if applicable

Telephone Number

Note: Each paper must have its own certificate of mailing, or this certificate must identify each submitted paper.

1. Fourth Status Inquiry Regarding Petition to Withdraw Wrongful Holding of Abandonment (2 pages);
2. Patent Application Information Retrieval print-out of October 4, 2005;
3. Copy of Docketing Ledger from December 9, 2004 to March 9, 2005; and
4. True Copy of File History for Application Number 09/002,187.

This collection of information is required by 37 CFR 1.8. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1.8 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

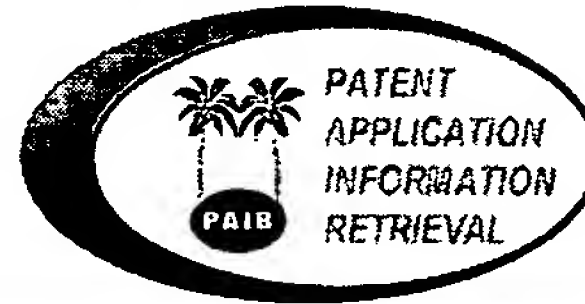
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United States Patent and Trademark Office

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## PATENT APPLICATION INFORMATION RETRIEVAL



Search results as of: 10-4-2005::9:4:56 E.T.

Search results for application number: 09/002,187			
Application Number:	09/002,187	Customer Number:	25537
Filing or 371(c) Date:	12-31-1997	Status:	Abandoned -- Failure to Pay Issue Fee
Application Type:	Utility	Status Date:	04-25-2001
Examiner Name:	VU, THONG H	Location:	PUBS - FILE MAINTENANCE FACILITY, BAILEYS X-RD, 308-6789
Group Art Unit:	2152	Location Date:	04-25-2001
Confirmation Number:	7536	Earliest Publication No:	-
Attorney Docket Number:	RIC-96-161	Earliest Publication Date:	-
Class/ Sub-Class:	709/250	Patent Number:	-
First Named Inventor:	RANDY HABERMAN, ARLINGTON, TX (US)	Issue Date of Patent:	-
Title Of Invention:	SYSTEM AND METHOD FOR ESTABLISHING A VIRTUAL CIRCUIT IN AN ATM NETWORK		

## Search Options

Assignments
Image File Wrapper

File History	
Date	Contents Description
<input type="checkbox"/> 12-09-2004	Mail Reconstruction Notice - Abandoned Application
10-01-2003	File Marked Lost
01-24-2001	Workflow - File Sent to Contractor
05-10-2001	Workflow - Drawings Sent to Contractor
04-25-2001	Mail Notice of Abandonment from Publications
04-25-2001	Abandonment for Failure to Pay Issue Fee
03-20-2001	Workflow - Drawings Sent to Contractor
12-18-2000	Mail Notice of Allowance
12-18-2000	Notice of Allowance Data Verification Completed
12-12-2000	Date Forwarded to Examiner
12-01-2000	Amendment after Final Rejection
10-06-2000	Case Docketed to Examiner in GAU
09-11-2000	Mail Final Rejection (PTOL - 326)
09-10-2000	Final Rejection
07-25-2000	Date Forwarded to Examiner
07-24-2000	Response after Non-Final Action

04-24-2000	Mail Non-Final Rejection
04-21-2000	Non-Final Rejection
02-23-2000	Date Forwarded to Examiner
02-15-2000	Response after Non-Final Action
02-15-2000	Request for Extension of Time - Granted
08-04-1999	Mail Non-Final Rejection
08-02-1999	Non-Final Rejection
08-19-1998	Petition Decision - Granted
07-28-1998	Petition Entered
07-09-1998	Case Docketed to Examiner in GAU
06-10-1998	Application Is Now Complete
04-02-1998	Notice Mailed--Application Incomplete--Filing Date Assigned
03-27-1998	IFW Scan & PACR Auto Security Review
06-05-1998	Preexamination Location Change
02-04-1998	Initial Exam Team nn

Wednesday

From PTO

08/988, 080

08/777, 024

Official Published Patent  
Official Published Patent

December 8, 2004

Thursday

From PTO

09/412, 269

09/564, 876

09/768, 069

10/114, 939

09/723, 501

09/723, 480

09/469, 506

09/670, 365

Notice of Abandonment  
Suppl Not of allow  
Non-Final office action  
Return Postcard (from Keith)  
Return Postcard (from Keith)  
Return Postcard (from Keith)  
Return Postcard (from Keith)  
Return Postcard (from Keith)

Do PTO

10/944, 253 (OC)

Prelim Amend, (trans & fee  
trans) ltr, cert of mail, filed  
11/30/2004 by Dittmarony & Carlson

09/406, 910 (OC)

Amend/Reply, (trans & fee trans) ltr,  
cert of mail, filed 12/3/2004 by  
Dittmarony & Carlson

09/903, 689 (OC)

Amend/Reply, (trans & fee trans) ltr,  
cert of mail, filed 12/2/2004 by  
Dittmarony & Carlson

10/051, 182 (OC)

Amend/Reply, (trans & fee trans) ltr,  
cert of mail, filed 11/29/2004 by  
Dittmarony & Carlson

Friday

From PTO

10/864, 670  
10/873, 715  
09/049, 384  
09/903, 571  
09/708, 068

To PTO

09/959, 025 (OC)

09/435, 540 (MPT)

December 10, 2004

Notice of applic. Pub-  
Notice of applic. Pub-  
Notice of Abandonment  
Rejection/Elect. Requirement  
Non-Final Office Action

RCE, postcard, filed 12/6/2004  
by Harrington & Snyder

Petition to Withdraw from Class, RCE, IDS, PTO 1449, Reps, cert of trans, post conform, USPTO Auto-Reply conform

Monday

To PTO

December 13, 2004

To PTO



December 14, 2004

Tuesday

From PTO

To PTO

09/059, 337 (OC)

Notice of appeal, fee trans,  
cert of mail filed by  
withdrawing & Carlson on  
12/6/2004

10/040, 226 (OC)

RCE, amend/reply, fee  
trans, cert of mail, filed  
12/7/2004 by withdrawing  
& Carlson

09/159, 404 (EUS)

IDS, PTO 1449, USPTO acknowledgment  
from e-IDS, fee trans;

09/159, 695 (EUS)

IDS, PTO 1449, fee trans, USPTO acknowledgment  
from e-IDS

09/402, 844 (EUS)

IDS, PTO 1449, fee trans, e-IDS confirm

Wednesday

From PTO

09/073, 304

10/230, 707

09/906, 532

Notice of abandonment  
musc comm regarding IDS  
2007-dated office action

To PTO

09/598, 167 (MAY)  
(09/159, 514)

Record cert of name change from-  
MEI, PTO 1545, per confirm

10/648, 427 (OC)

Amend/reply, (trans & fee trans) RCE,  
postcard, filed by Kennedy &  
Bryden on 12/9/2004

10/101, 199 (OC)

Amend/reply, (trans & fee trans) RCE,  
postcard, filed by Kennedy & Bryden  
on 12/16/2004

09/700, 077 (OJO/MAY)

Petition to withdraw from Issues after  
payment of Issues fee, RCE, IDS, PTO 1449,  
reply, cert of hand-delivered, postcard

09/707, 476 (OJO/MAY)

" " " " " "

actually  
filed  
12/17/2004  
and  
12/18/2004



Thursday

From PTO

10/859, 057  
10/860, 257  
09/159, 695

December 16, 2004

Updated filing Rept  
Notice of Recodulation  
Final Office Action

Friday

From PTO

10/854, 514  
09/224, 167  
10/023, 043  
09/897, 860  
09/159, 514

Notice of Recodulation  
Final Office Action  
Final Office Action  
Non-final appeal action  
Notice of Recodulation (via fax)

No PTO

10/282, 159 (OC)

Amend/Reply, (trans & fee trans) ltr,  
postcard, filed by Moriarty & Snyder  
on 12/15/2004

10/613, 079 (OC)

Amend/Reply, Amended Disclaimer,  
(trans & fee trans) ltr, postcard, filed  
12/15/2004 by Moriarty & Snyder

09/539, 003 (FAM)

Power/Revocation of attorney, cert of  
trans, fax confirm, USPTO  
auto-reply confirm

December 20, 2004MondayFrom PTO

09/103, 227

10/020, 893

09/409, 500

Issue Notification

Issue Notification

Notice of Allowance to Lewis &amp; Clark

To PTO

09/159, 404 (EUS)

IDS, PTO 1449, USPTO e-IDS  
 Confirmation. Note: e-IDS  
 actually filed 12/19/2004 but  
 confirmation was date stamp  
 of 12/20/2004, per trans

09/159, 695 (EUS)

IDS, PTO 1449, per trans, e-IDS  
 Confirmation. Note: e-IDS actually  
 filed 12/19/2004 but confirmation  
 was date stamp of 12/20/2004

TuesdayFrom PTO

09/708, 077

Decision on Petition (Withdrawn)

To PTO

10/021, 000 (RAP/NT)

Re: Power of Attorney, 3.73(b)  
 Grant, Cert of Trans, fax confirm,  
 USPTO auto-reply confirm

09/723, 402 (EUS)

IDS, PTO 1449, per trans, e-IDS  
 Confirmation

09/723, 401 (EUS)

IDS, PTO 1449, per trans, e-IDS  
 Confirmation

09/723, 501 (EUS)

IDS, PTO 1449, per trans, e-IDS  
 Confirmation

09/723, 400 (EUS)

IDS, PTO 1449, per trans, e-IDS  
 Confirmation

Wednesday

From PTO

10/882, 157  
09/575, 770  
09/768, 070 and

20 PTO

09/836, 146 (EUS)

December 22, 2004

Notice of applic. Pub-  
Non-Final Office Action  
Notice of allow & Claim Rec. Due

IDS, PTO 1479, e-IDS confirm;

Thursday

From PTO

20 PTO

09/539, 803 (EUS)

09/421, 590 (EUS)

December 23, 2004

Transmit Pay Trans, Trans,  
cert of Trans, fax confirm  
USPTO Auto-Reply confirm

Transmit Pay Trans, 3120 Amend,  
Sub of FD Mfr, 6 sheets FD, Request  
for Consideration of previously submitted  
IDS, Trans, cert of Trans, fax  
confirm, USPTO Auto-Reply confirm

Friday

December 24, 2004

COMPANY HOLIDAY

OFFICE CLOSED

FEDERAL HOLIDAY

December 27, 2004

Monday

From PTO

09/059, 337  
10/944, 253  
10/370, 713  
10/953, 022  
10/040, 226  
09/406, 910  
09/983, 689  
10/440, 598  
09/426, 038  
10/065, 465  
10/799, 950

Return Postcard (from Keith)  
Return Postcard (from Keith)  
Return Postcard (from Keith)  
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Return Postcard (from Keith)  
Return Postcard (from Keith)  
Return Postcard (from Keith)  
Notice of Abandonment  
Notice of Abandonment  
Notice of Recordation  
Non-Judicial Office Action (from Reed Smith)

To PTO

09/036, 509 (OC)

Amend/Reply, (trans & fee trans) Kly,  
Cert of mail, filed on 12/16/2004 by  
Dithavong & Carlson

10/404, 104 (OC)

Amend/Reply, (trans & fee trans) Kly,  
Cert of mail, filed 12/16/2004 by  
Dithavong & Carlson

05990561 (OC)

Continuation applic w/ 35pp spec, 6  
pg of drwgs, util (trans & fee trans,  
prelim amend, applic data sheet,  
dec, PTA prior, copy of cert &  
some change from M&W - M&W Inc.  
cert of express, filed by D&C on 12/17/2004

Monday (cont.)

From PTO (cont.)

10/99, 515  
10/99, 516  
09/30, 341  
09/76, 476  
10/88, 128  
10/09, 323

December 27, 2004 (cont.)

Initial Rept  
Initial Rept  
Notice of abandonment  
Dec of Pat to Withdraw Issue (2nd)  
Notice of Appic Pub (from HE & S)  
Non-Final Appic Action

20 PTO (cont.)

10/02, 890 (OC)

Amend/Reply (Trans & fee trans) via  
cert of mail, filed 12/31/2004  
by Dittmar & Carlson

10/15, 251 (OC)

Amend/Reply (Trans & fee trans) via  
cert of mail, filed 12/30/2004  
by Dittmar & Carlson

SKY04003 (OC)

Util appic w/ 25 pgs spec, 6 sheets  
draw, dec, appic data sheet,  
PTO/595, assign, util trans,  
fee trans, cert of express mail,  
filed on 12/16/2004 by Dittmar  
& Carlson

Monday (cont.)

20 PTO (cont.)

09/836, 177 (EUS)

IDS, PTO 1449, 2 docs, trans  
cert of trans, for confirm,  
USPTO - Auto-Reply Confirm

09/836, 176 (EUS)

IDS, PTO 1449, 2 docs, trans,  
cert of trans, for confirm,  
USPTO Auto-Reply Confirm

10/939, 430 (EUS)

Suppl appic Data Sheet, trans,  
cert of trans, for confirm, USPTO  
Auto-Reply Confirm

10/858, 501 (EUS)

Request for corrected recordation w/  
copy of Notice of Recordation - w/  
correction noted in red, copy of  
orig PTO 1595, copy of reg executed  
assign by Richard C. Schell, for  
confirm, USPTO auto-Reply  
confirm

December 28, 2004

Tuesday

From PTO

60/637, 405

09/904, 365

10/706, 298

Return Postcard  
Non-Animal Office Action  
Animal Office Action

December 29, 2004

Notice of Recordation (via fax)  
Non-Animal Office Action  
Non-Animal Office Action

To PTO

09/159, 406 (EUS)

Record cert of name: NCOM-MCT,  
PTO 1595, USPTO Electronic  
confirmation

CAS 98 02/61 (OC)

Continuation applic 2/6 pgs spec,  
6 sheets drawing, 1 annotated drawing  
6 sheets FD, sub-4 FP ltr, applic,  
data sheet, IP, PTO 1449, Prelim  
amend, util (trans & fw trans) ltr,  
postcard, filed on 12/27/2004  
by Partridge & Snyder

Thursday  
 Dec Friday

From PTO

09/539, 803  
 08/560, 051  
 09/332, 777  
 16/889, 051  
 10/891, 002  
 16/047, 684

December 30, 2004

Notice Regarding PTA (current accepts)  
 Notice Regarding PTA (current accepts)  
 Current Negotiation  
 Notice of Appeal Pub  
 Non appeal office action  
 Notice of abandonment

Friday

December 31, 2004

OFFICE CLOSED  
 FEDERAL HOLIDAY  
 COMPANY HOLIDAY



Monday

January 3, 2005

From PTO

20 PTC

RLC 00 033 61 (OC)

Continuation applic w/ 65ppd  
spec, 21 sheets drawings, dec,  
copy of memo for petition amend,  
applic data sheet, copy of  
certs of name change WCOM -> MCI,  
util trans, fee trans, cert  
of address mail, - filed  
12/20/2004 by William  
E Carlson

Tuesday

From PTO

10/009, 120  
10/170, 616  
10/069, 386

Corrected Filing Rept  
Non-Final Office action  
Notice of Reconsideration

January 4, 2005

Tuesday (cont.)

to PTO (cont.)

CIS 97160 CL (OC)

Continued on applic w/ 69 pgs  
spec, 17 sheets drawings,  
dec, copy of revoc/PDA,  
applic data sheet, prelim  
amend, cert of name change  
MCW → WCOM - SMC, file  
trans, fee trans, cert of  
express mail, filed 12/23/2004  
by Dithmering & Carlson

to PTO

09/414, 201 (OC)

Amend/Reply, trans & fee trans ltr,  
cert of ~~exp~~ mail, filed  
12/23/2004 by Dithmering &  
Carlson

10/031, 800 (OC)

Amend/Reply, trans & fee trans ltr,  
terminal disclaimer, trans,  
fee trans, cert of mail, filed  
12/23/2004 by Dithmering  
& Carlson

January 4, 2005 (cont.)

Wednesday

January 5, 2005

Thursday

January 6, 2005

From PTO

To PTO

09/103, 227  
10/020, 093

Official Published Patent  
Official Published Patent

11/020, 656  
09/433, 530  
10/077, 368  
04/801, 344

Return Protested  
Issue Notification  
Issue Notification  
Notice of Abandonment

To PTO

09/005, 0320 (EUS)

IDS, PTO 1449, c-IDS USPTO  
electronic confirm

10/113, 662 (EUS)

IDS, PTO 1449, c-IDS  
USPTO electronic confirm

09/005, 131 (EUS)

IDS, PTO 1449, c-IDS USPTO  
electronic confirm

09/404, 704 (DJO/EUS)

Adverse Pay Trans, sub-  
FD, sub, directs FD, Trans,  
ad of Trans, fax confirm,  
USPTO auto-reply confirm

09/436, 790 (EUS)

IDS, PTO 1449, fee authorization,  
c-IDS USPTO electronic confirm

10/113, 213 (EUS)

IDS, PTO 1449, c-IDS USPTO  
electronic confirm

09/863, 456 (EUS)

Status Inquiry, cert of Trans,  
fax confirm, USPTO auto-  
Reply confirm

09/113, 543 (EUS)

IDS, PTO 1449, c-IDS USPTO  
electronic

10/921, 920 (EUS)

RTNIFICAP, copy of NTFICAP,  
Substantive Specification - 76pgs,  
Trans, cert of Trans, fax confirm,  
USPTO auto-reply confirm

Thursday (cont.)

January 6, 2005 (cont.)

January 7, 2005

Do PTO (cont.)

Friday

From PTO

10/759,400

PTO 1595, cut of name  
change from WCOM to  
MIL, Inc., electronic  
USPTO confirm; c-IDS  
USPTO electronic confirm,  
IDS, PTO 1449

Do PTO

10/113,909 (EUS)

c-IDS, PTO 1449, USPTO  
electronic confirmation

10/113,908 (EUS)

c-IDS, PTO 1449, USPTO  
electronic confirmation

10/110,000 (EUS)

c-IDS, PTO 1449, USPTO  
electronic confirmation

10/113,772 (EUS)

c-IDS, PTO 1449, USPTO  
electronic confirm

10/113,691 (EUS)

c-IDS, PTO 1449, USPTO  
electronic confirm

Sunday

January 9, 2005

Thurs PTO

20 PTO

10/404, 112 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/404, 111 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/636, 438 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/404, 113 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

Monday

January 10, 2005

Thurs PTO

10/966, 841

Notice to file New Facts, Along  
Rept

09/733, 501

Advisory Action

09/329, 209

Commence Liquid Appeal

09/436, 796

Non-Final Office Action

09/468, 460

Notice of abandonment

10/030, 498

Notice of abandonment

10/759, 466

Notice of Reexamination (via fax)

10/966, 841

Notice of Reexamination (via fax)

20 PTO

10/404, 093 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/404, 330 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/636, 709 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/404, 079 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/404, 541 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/404, 094 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

Monday (cont.)

January 10, 2005 (cont.)

To PTO (cont.)

11/016, 159 (OC)

Trans  
Prelim Answer, (Answer)  
e fee trans) etc, cert of mail,  
filed 1/5/2005 by  
Witherby & Carlson

10/115, 258 (OC)

Answer/Reply, (Trans & fee  
Trans) etc, cert of mail, filed  
1/6/2005 by Witherby & Carlson

10/045, 071 (OC)

Answer/Reply, (Trans & fee Trans) etc,  
cert of mail, filed 1/5/2005 by  
Witherby & Carlson

10/054, 245 (OC)

Suppl. dec. petition under  
37 CFR 1.183, (Trans & fee  
Trans) etc, preheard, filed  
1/7/2005 by Morley & Snyder

12/798, 348 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

Tuesday

January 11, 2005

From PTO

10/747, 507

10/187, 190

Updated filing Regs  
Notice of abandonment

To PTO

10/023, 297 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirmation

10/023, 297 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirmation  
(2nd IDS)

10/079, 323 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/170, 615 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm



Wednesday

January 12, 2005

From PTO

10/135, 439

09/332, 777

Notice of abandonment  
Official Published Patent

Re PTO

09/079, 816 (OC)

Answer/Reply (Trans & few  
Trans) ltr, postcard,  
filed 1/10/2005 by  
Marrity & Snyder

10/385, 229 (EUS)

e-IDS, PTO 1449, electronic  
USPTO confirm

10/643, 856 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/09/716, 101 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/095, 956 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/095, 910 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

10/095, 909 (EUS)

e-IDS, PTO 1449, USPTO, electronic confirm

January 12, 2005

Wednesday (cont.)

Re PTO (cont.)

10/921, 920 (EUS)

e-IDS, PTO 1449,  
USPTO electronic confirm

and to 09/706, 973 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm

09/708, 069 (EUS)

e-IDS, PTO 1449, USPTO  
electronic confirm



Thursday

January 13, 2005

From PTO

Friday

January 14, 2005

From PTO

Comm Reg'd. Discusion of  
 Non Pub- and/or Notice of Appeal  
 Filing  
 Filing Rept  
 Updated Filing Rept  
 Updated Filing Rept

09/0602, 051

00/637, 405

10/758, 769

10/758, 768

To PTO

To PTO

09/001, 699 (OC)

Appeal Brief, (Trans & few Trans)  
 ile, <sup>and</sup> ~~copy~~ of postcard filed by  
 Harrity & Snyder on 1/11/2005  
 amend / reply, (Trans & few Trans)  
 ile, postcard, filed by  
 Harrity & Snyder 1/7/2005

10/290, 727 (OC)

10/440, 539 (OC)

Amend / Reply, (Trans & few  
 Trans) ile, postcard, filed  
 by Harrity & Snyder on  
 1/7/2005

Monday

January 17, 2005

FEDERAL &  
COMPANY HOLIDAY

Tuesday

From PTO

1/2 PTO

<sup>17</sup>  
January 18, 2005



Thursday (cont.)

To PTO (cont.)

09/023, 626 (OC)

Amend/Reply, (trans & fee trans) etc, cert of mail, filed 1/13/2005 by Dittmar & Carlson

10/115, 254 (OC)

Amend/Reply, (trans & fee trans) etc, cert of mail, filed 1/15/2005 by Dittmar & Carlson

210 971 493 (OC)  
(11/034, 699)

Cont applic. 20/24 pgs, spec, 5 sheets changed, filed (trans & fee trans), & return amend, applic data sheet, copy of resume/pt, dec, cert of applic made, filed 1/13/2005 by Dittmar & Carlson

January 20, 2005 (cont.)

Friday

From PTO

To PTO

10/979, 811 (EUS)

c-ID5, PTO 1449, USPTO electronic communication

10/030, 667 (EUS)

Amend/Reply, (trans & fee trans) etc, procon & filed 1/10/2005 by Dittmar & Carlson

10/097, 802 (EUS)

c-ID5, PTO 1449, USPTO electronic communication

10/097, 806 (EUS)

c-ID5, PTO 1449, USPTO electronic communication

10/097, 934 (EUS)

c-ID5, PTO 1449, USPTO electronic communication

January 21, 2005

Monday

January 24, 2005

From PTO

09/723, 486  
10/016, 110  
10/132, 372

Advisory Action  
Non-Panel Office Action  
Non-Panel Office Action

10/975, 595  
10/979, 093  
08/845, 915  
07/575, 770  
10/110, 000

Filing Rept.  
Filing Rept.  
Notice of Allowance; *Examiner's Use*  
Non-Panel Office Action  
Non-Panel Office Action

Do PTO

09/887, 804 (ac)

Amend/Reply, (Trans & fees)  
Trans) etc, prepared, filed  
by Morris & Singer on 1/14/05  
1 new E.O.T.

Do PTO

10/889, 120 (EUS)

CIDS, PTO 1449, USPTO  
electronic confer

09/708, 070 (DIO)

Card of name change  
MELW-MELM & MCOM to  
MELI, PTO 1595's, fax  
conferred

10/761, 375 (EUS)

CIDS, PTO 1449, USPTO  
electronic confer

Tuesday

January 25, 2005

From PTO

<u>Wednesday</u>		<u>January 26, 2025</u>		<u>January 26, 2025</u> (cont.)	
<u>From PTO</u>				<u>To PTO (cont.)</u>	
08/560, 051	Issue Notification			09/159, 403 (EUS)	Status Inquiry, cert of trans, for confirm, USPTO auto-reply confirm w/ regard to no of patent
09/435, 540	Decision on Petition to Withdraw Trans (granted)			09/430, 657 (EUS)	infringement of correction, request for cert of correction, for confirm, USPTO auto-reply confirm
09/690, 995	Board of Appeals Notice of appeal #			09/442, 199 (EUS)	Status Inquiry, cert of trans, for confirm, USPTO auto-reply confirm; w/ regard to reply filed 7/10/04
09/400, 125	Notice of Abandonment			09/397, 214	Status Inquiry, cert of trans, for confirm, USPTO auto-reply confirm; w/ regard to number of patent after filing with withdrawal of pending of abandonment
10/423, 194	Transmittal Office Action			09/354, 325 (EUS)	Status Inquiry, cert of trans, for confirm, USPTO auto-reply confirm; w/ regard to no of patent
09/266, 170	Notice of Allowance & Show the Use			10/441, 610 (EUS)	Status Inquiry, cert of trans for confirm, USPTO auto- reply confirm, w/ regard to no of patent
09/262, 951	Notice of Proposed Prosecution appeal, Est-Date			10/441, 549 (EUS)	Status Inquiry, cert of trans for confirm, USPTA auto- reply confirm; w/ request to transmittal 6/24/2004
10/256, 930	Updated Estimating Repl.				
<u>To PTO</u>					
10/097, 808 (EUS)	Status Inquiry, cert of trans, for confirm, USPTO auto-reply confirm, concerning <sup>copy</sup> <sub>7/10/04</sub>				
08/924, 920 (EUS)	Status Inquiry, cert of trans, for confirm, USPTO auto-reply confirm, copies of wire per patent papers orig filed 5/5/2004				
09/159, 503 (EUS)	Status Inquiry, cert of trans, for confirm, USPTO auto-reply confirm, w/ regard				



Wednesday (cont.)	January 26, 2005 (cont.)	Wednesday (cont.)	January 26, 2005 (cont.)
<u>La PTO (cont.)</u>		<u>La PTO (cont.)</u>	
20/933, 401 (EUS)	Status Inquiry, cert of trans, for confurm, USPTO auto reply Confurm, w/ regard to use of patent	11/693, 953 (OC)	3rd Review Amend, (Trans & few Trans), cert of mail, filed 1/25/2005 by Dillhaug & Carlson
20/947, 579 (EUS)	Status Inquiry, cert of trans, for confurm, USPTO auto reply Confurm, w/ regard to use of patent	10/076, 323 (OC)	Amend/Reply, (Trans & few Trans), cert of mail, filed 1/24/2005 by Dillhaug & Carlson
09/321, 387 (EUS)	Status Inquiry, cert of trans, USPTO auto reply Confurm, w/ regard to RCE	09/723, 481 (OC)	Amend/Reply, (Trans & few Trans), cert of mail, filed 1/18/2005 by Dillhaug & Carlson
09/409, 505 (EUS)	Status Inquiry, cert of trans, for confurm, USPTO auto reply Confurm, w/ regard to reply filed 6/30/2004	09/723, 501 (OC)	and amend/Reply, Review of appeal, cert of mail, filed 1/19/2005 by Dillhaug & Carlson
20/746, 901 (EUS)	Status Inquiry, cert of trans, for confurm, USPTO auto reply Confurm, w/ regard to use of patent	09/727, 783 (OC)	Review of appeal, cert of mail, filed 1/10/2005 by Dillhaug & Carlson
		10/230, 787 (EUS)	Status Inquiry, w/ copies of issue payment Trans papers, filed 7/15/2004, cert of trans, for confurm, USPTO auto Reply Confurm



Thursday

From PTO

January 27, 2005

Friday

From PTO

09/168, 070

09/152, 008

10/177, 811

10/910, 928

10/202, 159

09/278, 024

10/871, 802

09/219, 411

09/215, 845

10/041, 549

10/843, 705

09/262, 851

09/097, 304

09/419, 503

09/108, 070

To PTO

To PTO

January 29, 2005

Notice of Recardation (McJW - WIOM)

Notice of abandonment

Notice to file Miss Parts, Missing  
Receipt

Notice of Appeal Pet-

itionary Action

Advisory Action

Notice of Recardation

Notice of Recardation

Decision from General (Ex-manual)

Notice of abandonment

Non-Final Appeal Action

Non-Final Appeal Action

Non-Final Appeal Action

Final Appeal Action

Notice of Recardation (McJW - McJ)

10/113, 471 (OC)

Amend/Reply, (Transp. fee. 1000)

div, Exhibit A - Representative sheet

for abstract, Exhibit B - date

submitted, postmarked w/ money

Ref &amp; partially recorded IDS-1747

&amp; Exhibit (clerk copies of

174792)

provided

Friday (cont.)

January 29, 2005 (cont.)

Do PTO (cont.)

OKL 04001 (OC)

util applic w/ 20 pg spec,  
 4 sheets drawings, dec, applic  
 data sheet, PTO 1595, assign,  
 IDS, PTO 1449, repl,  
 util (trans & per trans) ltr,  
 prepared.

OKL 04001

util applic w/ 25 pg spec,  
 6 sheets drawings, dec, applic  
 data sheet, PTO 1595, assign,  
 IDS, PTO 1449, repl, util trans  
 & per trans) ltr, prepared.

Do PTO

10/038, 491 (QJO)

RTNTFMP, 4 mo EOI, substitute  
 figure 7, copy of NTFMP,  
 cert of trans, USPTO Auto Reply  
 confirm, fax confirm

January 31, 2005

Monday

From PTO

Tuesday

February 1, 2005

From PTO

10/890, 230  
09/908, 831  
10/036, 667

Notice of Recordation  
Notice of Abandonment  
and ~~Notice~~ Advisory Action

Wednesday

February 2, 2005

From PTO

10/290, 427  
10/859, 463

Not of Allowance; Claimants Due  
Decision on Petition Dismissed

To PTO

08/924, 928 (EUS)

3.73(6) Stmt, Power/Exhaustion Pat,  
Cert of Trans, fax confirm,  
USPTO auto-Reply confirm

10/843, 705 (EUS)

3.73(6) Stmt, Revoc/Pat,  
Cert of Trans, fax confirm,  
USPTO auto-Reply confirm

10/966, 841 (EUS)

RTN/TF-MP, copy of NT FMP,  
Dec, fee Trans, Cert of Trans,  
fax confirm, USPTO auto-  
Reply confirm.

Wednesday (cont.)

February 2, 2005 (cont.)

Wednesday (cont.)

February 2, 2005 (cont.)

To PTO (cont.)

To PTO (cont.)

09/575, 470 (EUS)

Reply to office actions  
w/ mail date of 12/20/04  
cert of trans, fax confirm,  
USPTO Auto-Reply  
confirm

10/230, 787 (EUS)

Petition to Withdraw from  
Track, RCE, IDS, PTO 1449,  
cert of trans, fax confirm,  
USPTO Auto-Reply confirm

11/023, 953 (EUS)

IDS, PTO 1449, trans,  
cert of trans, fax confirm,  
USPTO Auto-Reply  
confirm

09/564, 876 (EUS)

Petition to Withdraw from  
Track, RCE, IDS, PTO 1449,  
cert of trans, fax confirm,  
USPTO Auto-Reply confirm

09/575, 469 (EUS)

IDS, PTO 1449, Rpt, trans,  
cert of mail, fax confirm,  
USPTO Auto-Reply confirm

08/751, 668 (EUS)

Status Inquiry, cert of  
trans, fax confirm,  
USPTO Auto-Reply confirm

10/041, 549 (EUS)

Request Withdrawal of  
holding of abandonment w/  
copy of date stamped  
acknowledgment postcard  
orig filed 12/20/04  
E. reply, cert of trans,  
fax confirm, USPTO Auto-Reply  
confirm

11/020, 656 (EUS)

Submission of new pgs  
and RFI, copy of ~~NTI~~ <sup>02</sup>  
copy of dec from parent applic,  
3.73 amount, power/leave,  
copy of decision on 1.47 from  
parent, trans, cert of trans,  
fax confirm, USPTO Auto-Reply  
confirm

10/045, 880 (EUS)

Request withdrawal of  
holding of abandonment  
w/ copies of USPTO Auto-Reply  
confirm, View fee payment  
trans, View fee trans, orig  
filed 9/17/2004, cert of trans,  
fax confirm, USPTO Auto-Reply

Thursday

From PTO

10/097, 868  
09/040, 360

Final Office Action  
Official Published Patent

February 3, 2005

Friday

From PTO

10/292, 256  
10/900, 335  
10/900, 331  
10/456, 358

Status Reply letter  
Notice of Reexamination  
Notice of Reexamination  
Non-Final Office Action (from  
Status & Mail)

February 4, 2005

10/292, 256 PTO

10/447, 252 (MPL/Bus)

Draw Fee Payment  
Draw, Trans, set of FD  
Ltr, 5 sheets FD,  
3/2 amend, cert of  
Trans, Fax confirm,  
USPTO auto-reply  
Confirm

February 8, 2015

February 4, 2015

Tuesday

Monday

From PTO

From PTO

11/041, 420  
16/797, 668  
16/817, 275  
10/871, 802  
09/911, 592  
09/564, 876

Return Postcard  
Notice of appeal & Transmittal

11/041, 402  
09/159, 503

Return Postcard  
Notice of Publication (app)  
Notice of Appeal Pub-  
Notice of Appeal Pub-  
Non-Final Office Action  
Decision on Petition to Withdraw  
(Withdrawal) via fax

To PTO

09/566, 321 (OC)  
Appeal Brief, Trans & fee  
Trans) Rev, Postcard filed  
1/31/2005 by Murray &  
Freder



Wednesday

From PTO

09/159, 403  
09/564, 876

10/657, 328  
10/413, 971  
09/001, 830  
08/560, 051

20 PTO

February 9, 2005

<sup>4712</sup>  
Notice of ~~the~~ <sup>the</sup> ~~Law~~ <sup>Law</sup> ~~Investigation~~  
Division on Petition w/ ~~Notice~~  
(Disinvented)  
Notice of allow & ~~Law~~ <sup>Law</sup> ~~See~~ <sup>See</sup> ~~Due~~  
Non final office action  
Non final office action  
Official Published Patent

ECF, 1mo EOT, ~~forward~~  
filed 2/2/2005 by  
Harrity & Snyder

09/659, 337 (a) Appeal Brief, Trans,  
fee Trans, cert of mail,  
filed 2/3/2005 by  
Dittmar & Carlson

09/678, 084 (a) Notice of appeal, cert of  
mail, filed 2/2/2005  
by Dittmar & Carlson

10/053, 616 (a) Amend/Reply, (Trans & fee  
Trans) ~~file~~, cert of mail,  
filed 1/28/2005 by  
Dittmar & Carlson

Wednesday (cont.)

20 PTO (cont.)

11/026, 216 (a)

09/723, 420 (a)

10/000, 397 (a)

February 9, 2005 (cont.)

Problem  
Amend, (Trans & fee Trans)  
the, cert of mail, filed  
2/2/2005 by Dittmar  
& Carlson

Notice of appeal, cert of  
mail, filed 1/26/2005  
by Dittmar & Carlson

Amend/Reply, (Trans &  
fee Trans) ~~file~~, cert of mail  
filed 2/4/2005 by Dittmar  
& Carlson



Thursday

From PTO

09/421, 473

Notice of Abandonment

February 10, 2005

Friday

From PTO

11/014, 566

10/230, 787

10/358, 791

10/440, 597

10/115, 255

10/404, 104

To PTO

To PTO

10/036, 667 (OC)

RCE, postcard, filed by  
Harrity & Snyder on 2/7/2005

February 11, 2005

Filing Rept

Decision on Petition Withdrawal  
(Abandoned)Decision on Petition (Unrecap-  
ulate inventor) (Abandoned)

Notice of Abandonment

Non-Final Office Action

Non-Final Office Action

Monday

From PTO

February 14, 2005

To PTO

Tuesday

From PTO

February 15, 2005

09/023, 626 Return Postcard (from Keith)  
 09/070, 084 Return Postcard (from Keith)  
 10/053, 616 Return Postcard (from Keith)  
 10/076, 323 Return Postcard (from Keith)  
 11/034, 699 Return Postcard (app filing - from Keith)  
 09/427, 783 Return Postcard (from Keith)  
 11/026, 216 Return Postcard (app filing - from Keith)  
 11/026, 216 Return Postcard (amend filing - from Keith)  
 09/723, 481 Return Postcard (from Keith)  
 09/723, 501 Return Postcard (from Keith)  
 09/723, 480 Return Postcard (from Keith)  
 11/023, 953 Return Postcard (app filing - from Keith)  
 11/023, 953 Return Postcard (amend filing - from Keith)  
 09/059, 337 Return Postcard (from Keith)  
 10/906, 841 Updated Filing Rept  
 10/910, 369 Notice of Recalculation  
 10/051, 182 Notice of Allowance/Claimed Due  
 10/404, 541 Notice of Revised Applicable Pub Date  
 10/622, 208 Notice of Revised Applicable Pub Date  
 10/657, 328 Notice of Revised Applicable Pub Date  
 10/794, 427 Updated Filing Rept  
 10/817, 295 Decision on Petition

Tuesday (cont.)

From PTO (cont.)

February 15, 2005 (cont.)

Wednesday

From PTO

10/18/1997

Notice of Abandonment

Re PTO

CA 05001 (AC)

Util. appl. w/ 31 pgs, 12 sheets FD,  
IDS, PTO 1449 dec, applic. data  
sheet, PTO 1595, assign,  
reps, util. (trans. & fee trans) in,  
postcard, filed 2/9/2005  
by Harberty & Snyder

RIC 04030 (OC)

Util. applic. w/ 19 pgs spec, 5 sheets  
FD, dec, applic. data sheet,  
PTO 1595, assign, util. (trans. &  
fee trans) etc, cert. of express  
mail, filed 2/9/2005 by  
Dittmar & Carlson

11/03/1999 (AC)

Prelim  
Amend. (trans. & fee trans) etc,  
cert. of mail, filed by  
Dittmar & Carlson on  
2/9/2005

Thursday

February 17, 2005

From PTO

10/903, 590  
10/944, 253  
11/023, 953  
09/783, 745  
09/036, 589

Notice of Appeal Put-  
Notice of Appeal Put-  
Filing Rept  
Notice of Abandonment  
Final Office Action

Friday

February 18, 2005

From PTO

11/052, 848  
08/777, 824

Return Postcard  
Notice of Non-Recommendation

To PTO

08/932, 387 (OC)

Amend/Reply, (Trans & fee Trans) by  
Postcard, filed 2/15/2005 by  
Warrick & Snyder

10/702, 190 (OC)

Amend/Reply, Term disclaimer,  
132 affidavits of Angela Drapton,  
(Trans & fee Trans) etc, cert of  
mail, filed 2/14/2005 by  
Dutkiewicz & Carlson

10/023, 043 (OC)

Amend/Reply, (Trans & fee  
Trans) etc, cert of mail,  
filed 2/15/2005 by  
Dutkiewicz & Carlson

10/759, 406 (OC)

Corrected PTO 1595, copy 7  
Notice of Record w/correction  
noted, by mail, filed  
2/15/2005

09/096, 936 (050/EUS)

Check Due Pay Trans, 3/2 Amend,  
Set of FD etc, 15 sheets of FD, Request  
for Consideration of Reexamination filed. ID,  
Trans noted as trans had limitation

Friday (cont.)

February 18, 2005 (cont.)

To PTO (cont.)

04/575, 469 (FAM/MNW/ELS)

Close See Pay Trans,  
Trans, Cert of Trans,  
Fax confirm, USPTO  
Auto-Reply confirm

09/416, 101 (FAM/MNW)

Status Inquiry, copy  
of round papers orig.  
filed 10/17/2002, copy  
of status inquiry filed  
3/24/2005, Cert of Trans,  
Fax confirm, USPTO  
Auto-Reply confirm

09/504, 876 (QO)

Responses to Demand  
Relation to it, Abstract from  
Close, copy of petition &  
withdrawal from same papers  
orig filed 2/22/2005,  
Cert of Trans, Fax  
confirm

04/703, 482 (FAM/MNW/ELS)

Close See Payment  
Trans, Trans, request  
consideration of fees  
previously filed IDS,  
Cert of Trans, Fax  
confirm, USPTO  
Auto-Reply confirm

Monday

February 21, 2005

FEDERAL HOLIDAY  
COMPANY HOLIDAY

Tuesday

From PTO

February 22, 2005

Tuesday (cont.)

To PTO (cont.)

10/709, 575 (EUS)

February 22, 2005 (cont.)

IDS, PTO 1449, ref, trans,  
cert of trans, fax confirm,  
USPTO Auto-Reply confirm

To PTO

08/777, 824 (EUS)

Request for corrected  
Notice of Recordation, copy  
of Notice previously  
received, fax confirm  
USPTO Auto-Reply confirm

09/436, 796 (EUS)

IDS, PTO 1449, trans, ref,  
trans, cert of mail, postcard

09/779, 092 (EUS)

IDS, PTO 1449, ref,  
trans, cert of mail,  
postcard

10/826, 114 (EUS)

IDS, PTO 1449, ref, trans,  
cert of mail, postcard





Thursday

February 24, 2005

From PTO

Friday

February 25, 2005

From PTO

11/057, 275

Return Postcard

11/020, 210

Filing Rept

10/325, 839

Decision on Petition to Convert

Conversion (started)

09/452, 957

Notice of Abandonment

08/575, 433

Non-final Office Action

09/370, 504

Non-final Office Action

10/040, 074

Non-final Office Action

10/051, 100

Non-final Office Action

To PTO

To PTO

10/786, 290 (cc)

Amend/Reply (Transf fee pay)

ltr. postcard, filed 2/14/2005

Rep. Parity, & Snyder

Monday

February 28, 2025

From PTO

10/721, 472

Notice of Recordation (waiver)

Tuesday

March 1, 2025

From PTO

09/950, 035

Non-stated Office action

10/889, 002

Notice of Appeal Pub

10/953, 022

Notice of Appeal Pub

20 PTO

10/804, 690 (EUS)

e-IDS, PTO 1449, USPTO

Electronic confirm

20 PTO

10/440, 539 (EUS)

e-IDS, PTO 1449, USPTO

Electronic confirm

10/721, 472 (EUS)

e-IDS, PTO 1449, USPTO

confirm repte; record

cert of name change from

WCOM to MCI (electronic);

USPTO electronic confirm

repte

add

10/436, 796 (EUS)

e-IDS, PTO 1449, USPTO

Electronic confirm

10/889, 051 (EUS)

e-IDS, PTO 1449, USPTO

Electronic confirm

10/372, 443 (EUS)

Petition Under 1.78(d)

(Correction of endorsement)

Cert of Review, for confirm

USPTO Audio-Reply

Confirm

Wednesday	March 2, 2005	to Wednesday (cont.)	March 2, 2005 (cont.)
<u>From PTO</u>			
10/024, 202	Non-Judicial Office Action	60/547, 785 (EUS)	Request cert copy of appl
09/587, 015	Notice of Abandonment		as filed, fax confirm
10/755, 445	Notice Regarding POA (newer current accepted)	60/547, 786 (EUS)	"
09/397, 214	Notice of Rescinded Abandonment	11/057, 275 (EUS)	"
09/501, 629	Notice of Abandonment	10/858, 502 (EUS)	"
		60/560, 009 (EUS)	"
		10/858, 501 (EUS)	"
		10/860, 803 (EUS)	"
		10/858, 491 (EUS)	"
		10/858, 503 (EUS)	"
		10/858, 517 (EUS)	"
<u>To PTO</u>		10/859, 057 (EUS)	"
10/699, 823 (EUS)	Request for certified copy of application as filed, cert of <sup>gov</sup> fax confirm	10/858, 808 (EUS)	"
		10/859, 463 (EUS)	"
		10/860, 609 (EUS)	"
10/758, 213 (EUS)	"	10/859, 469 (EUS)	"
10/758, 770 (EUS)	"	10/858, 525 (EUS)	"
10/759, 404 (EUS)	"		
10/975, 595 (EUS)	"	10/889, 128 (EUS)	e-IDS, PTO 1449, USPTO electronic confirm
10/537, 894 (EUS)	" (4 copies)		
10/975, 215 (EUS)	"		
10/975, 971 (EUS)	"	10/761, 375 (EUS)	e-IDS, PTO 1449, USPTO electronic confirm
10/975, 214 (EUS)	" (2 copies)		
10/794, 437 (EUS)	"		
10/800, 272 (EUS)	"	10/068, 381 (EUS)	e-IDS, PTO 1449, USPTO electronic confirm
10/786, 298 (EUS)	"		
10/798, 348 (EUS)	"		
60/517, 899 (EUS)	"	10/230, 787 (EUS)	e-IDS, PTO 1449, USPTO electronic confirm
10/240, 672 (EUS)	"		

To PTO (cont.)

From PTO

60/500, 009 (EUS) Request for certified copy of applic. as filed (11), fax confirm

09/436, 794 Return Postcard  
09/779, 092 Return Postcard  
10/979, 811 Notice of Recitation (via fax)  
09/409, 506 Notice of Recitation (via fax) (corrective MCIN)

10/024, 202 (EUS) Status Conference, cert of trans, fax confirm, USPTO Auto-Reply confirm e-IDS PTO 1449, USPTO Electronic confirm

09/469, 506 Notice of Recitation (via fax) (from MCIN → WIOM)  
09/469, 506 Notice of Recitation (via fax) (from WIOM → MLI, Inc.)

10/036, 667 (EUS) e-IDS, PTO 1449, USPTO electronic confirm

09/768, 070 (EUS) e-IDS, PTO 1449, USPTO electronic confirm

20 PTO  
11/016, 159 (EUS) IDS, PTO 1449, trans, cert of trans, fax confirm, USPTO Auto-Reply confirm

11/034, 699 (EUS) IDS, PTO 1449, trans, cert of trans, fax confirm, USPTO Auto-Reply confirm

11/034, 699 (EUS) IDS, PTO 1449, trans, cert of trans, fax confirm, USPTO Auto-Reply confirm

11/036, 316 (EUS)

IDS, PTO 1449, trans, cert of trans, fax confirm, USPTO Auto-Reply confirm

10/979, 811 (EUS)

PTO 1545, assign, filed electronically

09/469, 506 (EUS)

Record cert of name change from WIOM to MLI, Inc. filed electronically  
PTO 1595, filed corrective recitation  
moving entry by amendment for MLI, Inc. to MLI, Inc. filed electronically



Thursday (cont.)

March 3, 2005 (cont.)

To PTO (cont.)

10/859, 463 (EUS)

Renewed 1.476 Petition,  
cert of trans, fax confirm,  
USPTO auto-reply confirm

10/979, 811 (EUS)

RTNTEMP, copy of NTFMP,  
disc, trans, fee trans,  
fax confirm, USPTO auto-  
Reply Confirm

09/469, 506 (EUS)

Revise/Power of attorney, 3.13 (b)  
Amend, cert of trans, fax confirm,  
USPTO auto-reply confirm

Friday

March 4, 2005<sup>65</sup>

From PTO

08/987, 849

Misc Comm w/Interviewer  
Summary regarding consideration  
of IDS

10/076, 323

Addressing Action  
Misc Comm Regarding Consideration  
of IDS

10/645, 071

Notice of Applicable Pub

10/927, 753

Notice of Applicable Pub

11/034, 699

ADS Petition of App Stilling Rept

10/860, 609

Decision on 1.47 (a) Petition (Granted)

10/798, 348

Non-Judicial Office Action

10/851, 974

Non-Judicial Office Action

To PTO

10/979, 811 (EUS)

Prelim Amend, cert of trans,  
fax confirm, USPTO auto-reply  
Confirm

09/768, 068 (OC)

Amend/Reply (Trans & fee  
trans) disc, precluded, filed  
2/23/2005 by Partridge,  
Snyder



Monday

March 7, 2005

From PTO

11/041, 402 Filing Rept  
 10/013, 777 Notice of Recordation (via fax)  
 10/826, 114 Return Postcard  
 60/655, 911 Return Postcard  
 10/922, 131 Notice of Recordation  
 09/421, 590 Misc 312 & IDS Communication

To PTO

10/013, 777 (EUS) PTO 1595 assign, electronic confirmation  
 09/768, 069 (OC) Amend/Reply, (trans & fee trans) ltr., postcard filed 2/28/2005 by Kimberly E Snyder  
 RICO5001 (OC) Util applic w/ds pg & rplc, 5 sheets drawing, dec, PTO 1595 assign, applic data sheet, IDS, PTO 1479, rplc, util (trans & fee trans) ltr., postcard, filed 2/25/2005 by Kimberly E Snyder

Tuesday

March 8, 2005<sup>67</sup>

From PTO

11/064, 973 Return Postcard  
 11/041, 420 Filing Rept  
 09/206, 844 Notice of Abandonment/  
 Interview Summary  
 08/924, 928 Suppl Notice of Allow

To PTO

10/699, 823 (OC) Amend/Reply, (trans & fee trans) ltr., postcard, filed 2/28/2005 by Kimberly E Snyder  
 RICO500.2, PR (OC) Prior applic w/ 43 sheets of app, 3 sheets drawing, applic data sheet provided trans & fee trans sheet, filed 2/25/2005 by Kimberly E Snyder

Wednesday

March 9, 2005

From PTO

09/413,845

Issue Notification

10/786,398

Advisory Action

08/987,849

Misc Comments Regarding  
Consideration of IDS

09/627,558

Non-Final Office Action

09/397,578

Notice of allow &amp; Issue Fee Due

10/702,190

Return Postcard (from Keith)

11/034,699

Return Postcard (from Keith)

10/023,043

Return Postcard (from Keith)

10/800,344

Return Postcard (from Keith)

11/054,088

Return Postcard (from Keith)

09/983,690

Notice of Recordation (from Keith)

10/016,111

Notice of Recordation (from Keith)

To PTO

09/875,003 (OC)

Amend/Reply, (Trans & fee  
trans) ltr, cert of mail, filed  
3/2/2005 by Dittmarong & Carlson

10/385,221

am2

09/983,690 (OC)

Amend/Reply, (Trans & fee trans)  
ltr, cert of mail, filed 2/28/2005  
by Dittmarong & Carlson

09/123,109 (OC)

Amend/Reply, (Trans & fee  
trans) ltr, cert of mail, filed  
3/2/2005 by Dittmarong & Carlson

Wednesday (cont.)

March 9, 2005 (cont.)

To PTO (cont.)

10/013,777 (OC)

Amend/Reply, (Trans & fee  
trans) ltr, filed 3/1/2005  
by Dittmarong & Carlson

SKY05001 (OC)

CIP Applic w/ 36 pp spec, 11  
sheets drawings, dec, applic  
data sheet, PTO 1595, assign,  
util (Trans & fee trans) ltr,  
cert of express mail, filed  
2/25/2005 by Dittmarong  
& Carlson

Serial No.:                      Docket: RIC-96-161  
Filing Date: 12/31/97   Attorney: Deborah Miller  
Applicant(s): Hayes et al  
Title: System and Method for Establishing a Virtual Circuit in an ATM  
Network

The following was mailed on the date indicated on the Certificate  
of Mailing. The actual date of receipt in the U.S.P.T.O. is as of  
the date stamped hereon:

Utility Patent: 27 pgs of specification (w/cover & abstract)  
5 sheet (s) of 5 figures of informal drawings  
Certificate of Mailing/Express Mail EM145302105US

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[Date of Mailing: December 31, 1997]

MCI Ref #      **RIC 96 161**

Date              **12/31/97**

Docketed              ☒  
Expense List           ☒  
Log Book               ☒  
Amount                 ☒

101 Filing Fee  
102 Extra ind. claims  
103 Extra claims  
104 Multiple Dependent claims  
105 Surcharge NTFMP  
114 Provisional Filing Fee  
115 Extension for response 1 month  
116 Extension for response 2 months  
117 Extension for response 3 months  
118 extension for response 4 months  
119 Notice of Appeal  
123 Petition for Provisional Application  
126 Submission of IDS  
142 Utility Issue Fee

Serial No.:                      Docket: RIC-96-161  
Filing Date: 12/31/97   Attorney: Deborah Miller  
Applicant(s): Hayes et al  
Title: System and Method for Establishing a Virtual Circuit in an ATM  
Network

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or other  
time

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of Mailing. The actual date of receipt in the U.S.P.T.O. is as of  
the date stamped hereon:

Utility Patent: 27 pgs of specification (w/cover & abstract)  
5 sheet (s) of 5 figures of informal drawings  
Certificate of Mailing/Express Mail EM145302105US

jc560 U.S. PTO  
**09/002187**  
12/31/97

**PLEASE DATE STAMP AND RETURN POSTCARD**  
[Date of Mailing: December 31, 1997]

# PATENT APPLICATION TRANSMITTAL

ASSISTANT COMMISSIONER FOR PATENTS  
Box Patent Applications  
Washington, D.C. 20231

Transmitted herewith for filing is the Utility Patent Application of:

Inventor(s): David S. Hayes  
Randy Haberman  
Steve Herlocher

Enclosed are: Utility Patent: 27 pgs of specification (w/cover & abstract)  
5 sheet (s) of 5 figures of informal drawings  
Certificate of Mailing/Express Mail EM145302105US  
Postcards

**Title:**

System and Method for Establishing a Virtual Circuit in an ATM Network

The Filing Fee has been calculated below:

	Number Filed	Number Extra	Rate	Fee
Basic Fee			\$790.00	\$790.00
Total Claims	29 - 20 =	9	x \$22.00	\$198.00
Independent Claims	4 - 3 =	1	x \$78.00	\$82.00
Multiple Dependent Claim Present			\$250.00	
Assignment Recordation Fee			\$40.00	
			<b>Total Filing Fee</b>	<b>\$1,070.00</b>

It is respectfully requested that the attached post card be stamped with the filing date and unofficial application number of these documents and returned to the addressee as soon as possible.

This patent application is being submitted under 37 C.F.R. Section 53(b) without filing fee.

☐ I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application listed herein: \_\_\_\_\_

I hereby certify that this correspondence is being deposited with the United States Postal Service as "Express Mail" in an envelope addressed to: Box Patent Application, Assistant Commissioner for Patents, Washington D.C. 20231

Dated: 12/31/97  
Express Mail Label No. EM145302105US

By: Carolyn Miller

Deborah Miller 12/31/97  
Deborah Miller  
Attorney for applicant(s)  
Reg. No. 37,679

Send all correspondence to:  
Technology Department  
MCI COMMUNICATIONS CORPORATION  
1133 19TH STREET, NW  
WASHINGTON DC20036

# **System and Method for Establishing a Virtual Circuit in an ATM Network**

**Inventors:** David S. Hayes  
Randy Haberman  
Steve Herlocher

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## ***Background of the Invention***

### ***Field of the Invention***

The present invention is directed to a telecommunications network and, in particular, to a system and method for establishing a virtual circuit in an ATM network.

10

### ***Related Art***

Computer networks often are designed to connect "client" systems with "server" systems. A client is a device and/or software that requests information from a server. A client may be a computer system or process, for example. The server is typically a shared computer in which data is stored and from which data is distributed. A server may be a computer program, a database system, or a computer system, for example. The server provides a service to clients utilizing a "client-server model."

15

According to the client-server model, the client connects to the server, sends a request (or query) to the server, and waits for a response from the server. The client may request that the server perform a computation, retrieve a file, or search a database for a particular entry, for example. It is not uncommon for the client to subsequently translate the server's response into a format that a human can understand.

20

Computer networks are often designed with multiple servers to increase network reliability. Those skilled in the art will recognize that server redundancy decreases the disruption felt by the network when one or more servers fail. When failure does occur, client queries can be redirected to alternate servers capable of handling the queries.

Many networks today employ an asynchronous transfer mode (ATM) scheme for network communication. ATM networks are particularly useful in today's multi-vendor environment where applications have different performance, quality, and business requirements, but which utilize the same computer, multiplexer, router, switch, and/or network.

Routing of queries in an ATM network is based on virtual circuit routing. A virtual circuit is a circuit that appears to the client and to the server to be a dedicated point-to-point circuit. An ATM network must establish a path from the client to the server (*i.e.*, the virtual circuit) before client / server communication can begin. The ATM network establishes a virtual circuit after receiving a request for connection from a client. The request for connection includes an address which identifies the desired server to the ATM network. Through a private network-to-network interface (PNNI) routing process, the ATM network selects the best path through the network from the requesting client to the desired server. These conventional ATM routing techniques are well known to those skilled in the art.

Conventional ATM routing performs poorly where the desired server has failed or is otherwise unavailable. Queries must be routed to a new server capable of handling the query. Some clients may not be capable of selecting a new server—these clients may not have their queries answered. Other clients may be capable of selecting a new server, but doing so requires additional time and the



client must maintain a list of all currently available servers and their addresses. What is needed, therefore, is a system and method for establishing a virtual circuit in an ATM network to any one of a set of suitable servers without the client having to know either the status or address of suitable servers.

5

### *Summary of the Invention*

10

The present invention is directed to a system and method for establishing a virtual circuit from a client through an ATM network to a server, where the server is selected from a group of servers. The client requesting the virtual circuit need not know the individual address of any of the servers in the group, only the address of the group itself. Selection of a particular server is transparent to the client—the ATM network is responsible for selecting a server from the group identified by the client.

15

One advantage of the present invention is that clients are not responsible for selecting an alternate server in the event of server failure. According to the present invention, routing decisions are made at the network level rather than by the client. When a request for connection is received from a client, a virtual circuit is established between the client and a server from the selected functional group which is known to be operational. The client is therefore relieved of the responsibility of handling failed requests for connection.

20

Another feature of the present invention is that connections to servers within a particular functional group may be distributed according to a desired criteria. In a preferred embodiment, connections may be distributed according to the processing load carried by each server in a functional group—servers receive requests for connection at a rate inversely proportional to their current processing load. This allows queries directed to a particular functional group to be

25

distributed to servers able to respond most quickly, thereby maximizing the performance of the ATM network.

5 Yet another feature of the present invention is that the client need not know the address of each server in the ATM network. The client need only know the address of a functional group of servers. The addresses of individual servers within each functional group may therefore be modified without requiring that new addresses be stored at each client.

10 Further features and advantages of the invention, as well as the structure and operation of various embodiments of the invention, are described in detail below with reference to the accompanying figures. In the drawings, like reference numbers generally indicate identical, functionally similar, and/or structurally similar elements. The drawing in which an element first appears is indicated by the leftmost digit(s) in the corresponding reference number.

### ***Brief Description of the Figures***

15 The present invention will be described with reference to the accompanying drawings, wherein:

FIG. 1 is a block diagram of a network environment within which the present invention is used;

20 FIG. 2 is a block diagram illustrating a network environment in more detail;

FIG. 3 is a block diagram illustrating the software components of a multiple destination routing controller;

FIG. 4 is a flowchart of the operation of a preferred embodiment of the invention; and

FIG. 5 is a block diagram of a computer system representing a preferred implementation of a multiple destination routing controller.

## ***Detailed Description of the Preferred Embodiments***

### **I. Overview of the Invention**

5           The present invention is directed to a system and method for establishing a virtual circuit in an ATM network. According to the present invention, a client transmits a request for a virtual circuit (*i.e.*, a request for connection) to an ATM network. The request specifies an address identifying a group of servers which are all capable of providing a desired function (*i.e.*, a functional group).

10           Upon receiving the request for connection, the network of the present invention selects a suitable server from the identified functional group. Importantly, the selection of a particular server is made at the network level, rather than by the client. The network then creates a virtual circuit connecting the client to the selected server. Communication between the client and server may  
15 then proceed according to standard ATM techniques.

### **II. ATM Network Environment**

          The present invention is suitable for operation in an ATM network environment. As is well known to those skilled in the art, ATM networks use various communication protocols, depending generally upon the type of devices  
20 which are communicating: network-to-network interface (NNI) signaling protocol is used between ATM switches, user-to-network interface (UNI) signaling protocol is used between clients/servers and the ATM network, and

private-network-to-network interface (PNNI) routing requests are used by ATM switches to determine proper routing for the virtual circuit.

5 The present invention is described herein in the context of an ATM network environment. It should be understood, however, that the present invention is not limited to this environment. Those skilled in the art will recognize that the present invention can operate within other network environments following protocols similar to the ATM network protocol, such as a TCP/IP network protocol.

10 FIG. 1 is a block diagram of an example network environment 100 suitable for implementation of a preferred embodiment of the present invention. Network environment 100 includes an ATM network 102, clients 104 (indicated by reference numbers 104A through 104C), and servers 106 (indicated by references numbers 106A through 106C). Clients 104 and servers 106 communicate bi-directionally with ATM network 102. This example network environment is now described.

15 Clients 104 communicate with servers 106 via ATM network 102. According to the present invention, clients 104 and servers 106 interact in a conventional client/server relationship well known to those skilled in the art. However, ATM network 102 does not recognize a difference between clients 104 and servers 106. ATM network 102 is concerned with the transmission of data, without regard to which system is the "client" and which is the "server".

20 Consequently, clients 104 and servers 106 are so designated to indicate their relationship to each other, but are interchangeable so far as ATM network 102 is concerned.

As is known to those skilled in the art, clients **104** may contact a server **106** for many different purposes. Clients **104** and servers **106** may also be implemented in many different ways, so long as both are able to communicate via ATM network **102**. For example, client **104** represents a travel agent's airplane reservation system, and server **106** represents a central booking computer. Alternatively, client **104** represents a point-of-sale cash register, and server **106** represents a computer tasked with tracking inventory and sales. Alternatively still, client **104A** represents a gas pump with a credit card reader, and server **106** represents a credit checking computer.

FIG. 2 is a more detailed illustration of network environment **100**. ATM network **102** includes ATM switches **202** interconnected by communication pathways **204**, and a multiple destination routing controller **206**.

ATM switch **202** in a preferred embodiment is a conventional ATM switch. Alternatively, ATM switches **202** can be implemented using any network elements that are compatible with ATM technology, including NNI signaling protocol and PNNI routing protocol.

Communication pathways **204** represent bidirectional point-to-point channels between clients **104**, servers **106**, and ATM switches **202**. Communication pathways **204** support UNI or NNI signaling protocol as appropriate. As is well known to those skilled in the art, communications between an ATM switch **202** and an end-user (*i.e.*, a client or server) conventionally follow a UNI signaling protocol. Conversely, communications between ATM switches **202** conventionally follow a NNI signaling protocol. Communication pathway **204** therefore represents a bidirectional communication link which supports the signaling protocol appropriate to the devices connected to the link.

Multiple destination routing controller 206 is connected to the network of ATM switches 202 via one or more communication pathways 204. FIG. 2 depicts a single communication pathway 204 between multiple destination routing controller 206 and ATM switch 202C. However, those skilled in the art will recognize that multiple communication pathways 204 could be used to provide redundancy and enhanced network reliability. The operation of multiple destination routing controller 206 is described in detail below.

### III. Conventional ATM Routing

Conventional ATM routing is now described in terms of a simple example. Referring to FIG. 1, assume in this example that client 104A is a gas pump with a credit card reader that wishes to ask server 106A "Is this credit card valid?" in response to customer's request to purchase gas with a credit card.

Communications between clients and servers via ATM network 102 may be analogized to a telephone call. Before any client/server communication can take place, client 104A must establish a virtual circuit to server 106A. In terms of the telephone call analogy, client 104A calls server 106A and server 106A answers the call. In answering the call, server 106A accepts the incoming virtual circuit and a communication path is established over which client 104A and server 106A can interact. Client 104A can now make the query "Is this credit card valid?" for example, and server 106A can answer the query.

Those skilled in the art will recognize that any end-user device (*e.g.*, client or server) can request a virtual circuit to any destination. In the context of the current invention, however, most virtual circuit requests come from client systems.



With conventional ATM networks, clients 104 must know the ATM address of the server 106 with which they wish to connect. This characteristic is analogous to conventional telephony, wherein the calling party must know the telephone number of the called party. Further, no two end-users have the same ATM address. Servers and clients each have a unique ATM address. Accordingly, in order to request a virtual circuit between them, client 104A specifies the ATM address of server 106A.

According to conventional PNNI routing, ATM network 102 selects the best route through ATM network 102 for a virtual circuit from client 104A to server 106A. Referring to FIG. 2, one possible route from client 104A to server 106A would be through ATM switches 202A and 202B. If, on the other hand, client 104A wanted to establish a virtual circuit to server 106B, then one possible route would be from client 104A to ATM switch 202A to ATM switch 202B to server 106B. Another route would be from client 104A to ATM switch 202A to ATM switch 202C and to server 106B. In either case, ATM network 102 uses the PNNI routing process to select the best route through ATM network 102 from client 104A to server 106A or to server 106B.

Conventional PNNI routing procedures associate ATM switches into “peer groups” in order to create a routing hierarchy. Peer groups typically contain only a few ATM switches. Large ATM networks are constructed by combining peer groups together into larger peer groups. The PNNI routing protocol organizes the peer groups into a layered hierarchy. The use of peer groups organized into multiple hierarchical levels is well known to those skilled in the art, and will not be discussed in detail herein.

According to conventional ATM technology, one ATM switch in each peer group is designated the “peer group leader.” The peer group leader is

responsible for maintaining the topology of all ATM switches in its peer group. Additionally, the peer group leader also represents its peer group to higher layers in the routing hierarchy. If an ATM switch in a peer group receives a request for a virtual circuit and does not already know the correct route, the ATM switch asks  
5 the peer group leader to determine the route.

Consider again the example described above wherein client **104A** wishes to establish a virtual circuit to server **106A**. Suppose that ATM switch **202C** is the peer group leader for a peer group consisting of ATM switch **202A**, ATM switch **202B**, and ATM switch **202C**. Client **104A** transmits to ATM switch  
10 **202A** a request for connection with server **106A**, including server **106A**'s ATM address. Suppose further that ATM switch **202A** does not already know a route for a virtual circuit from client **104A** to server **106A**. ATM switch **202A** asks peer group leader ATM switch **202C** to determine a route from client **104A** to server **106A**.

15 A limitation of conventional ATM routing is that if server **106A** is not operational because of a failure, because of having been removed from service for routine maintenance or for some other reason, client **104A** is typically unaware of this status of server **106A**. If client **104A** is not capable of selecting a new server, then client **104A** may be unavailable to serve customers. That is, the gas  
20 pump credit card reader will be out of service, for example.

If, on the other hand, client **104A** is capable of selecting a new server, then client **104A** may do so. However, time is wasted between determining that server **106A** is unavailable and selecting the secondary server. In any event, client **104A** may not know the individual ATM address for the secondary server.

5           Selecting a new server may also be complicated by the fact that typically  
client 104A does not have a view of the current conditions in the entire ATM  
network. Client 104A generally does not have access to the dynamic status of the  
network. Knowing the status and ATM address of a particular secondary server  
at any given point in time would require the client to maintain an up-to-date  
listing of all currently available servers and their addresses. Status information  
could be distributed to client 104A, but this would increase the complexity and  
expense of client systems. Moreover, this distribution of the information would  
add to the load on ATM network 102. The extra load would diminish ATM  
10 network 102's capacity to carry queries.

#### **IV.    Functional Groups within an ATM Network**

15           According to the present invention, client 104A sends to ATM network  
102 a request for connection. The request for connection differs from a  
conventional request in that it specifies an address of a functional group of  
servers, rather than a particular individual server. ATM network 102 selects a  
server from the specified functional group and connects client 104A to that  
server. This is advantageous to client 104A because ATM network 102 has a  
better view of current network activity and status than client 104A. Accordingly,  
ATM network 102 can base a selection decision on factors not available to client  
20 104A, such as the current processing load carried by each server. The following  
section provides further details related to server selection and routing.

25           According to the present invention, servers 106 are grouped according to  
the functions they perform. Each server 106 in a particular functional group must  
be able to service any request from a client 104 sent to the group. The present  
invention assumes that any operational server within a functional group may be  
selected to service a client query sent to that group. For example, several servers

may be grouped together to verify credit card purchases at gas pumps. Each server in the group must be able to process credit card queries sent to that group.

5 Each functional group is assigned a unique ATM address. For example, a group of servers validating credit cards may be assigned an ATM address of 0000.0000.0001. Similarly, a group of servers handling toll-free routing information may be assigned an ATM address of 0000.0000.0002. The ATM functional group addresses may be chosen arbitrarily and assigned at the convenience of an administrator of ATM network 102.

10 Each server in a functional group is configured to respond to the ATM functional group address. A single server may be included within more than one functional groups, so long as that server is capable of servicing client queries sent to each of the groups. Servers may therefore respond to two or more ATM addresses: their individual ATM address, and the address of each functional group to which they belong.

15 For example, referring to FIG. 2, suppose that server 106A has a device address of 0000.0000.0010, server 106B has a device address of 0000.0000.0020, and the functional group consisting of 106A and 106B has a functional group address of 0000.0000.0030. According to the present invention, server 106A responds to the address 0000.0000.0010 as well as to the address  
20 0000.0000.0030. Likewise, server 106B responds to the address of 0000.0000.0020 as well as to the address of 000.0000.0030.

## V. Operation of Multiple Destination Routing Controller

The operation of multiple destination routing controller (MDRC) 206 will be now described with reference to FIG's 3 and 4. FIG. 3 is a block diagram 300 depicting the various software components of MDRC 206: an interface module 302, a routing module 304, a peer group leader module 308, and a server module 310. FIG. 4 is a flowchart 400 depicting the steps performed by ATM network 102, including MDRC 206, according to a preferred embodiment.

In FIG. 3, each of these software components, or modules, represent a particular function performed by a computer under the control of computer software. Often the line between the functionality of one component and the next is arbitrarily drawn, and is described as such purely for purposes of convenience. For instance, a function described as being performed by server module 306 might equivalently be performed by interface module 302 or routing module 304. Those skilled in the art will note the importance of the function described, not the arbitrary grouping of functionality into software modules.

Those skilled in the art will recognize that creating software code based on the following functional descriptions is well within an ordinary level of skill. Those skilled in the art will also recognize that, depending upon the environment and the hardware used, different languages would be appropriate under different circumstances. Again, the choice of a particular language is well within the level of ordinary skill in the art.

Interface module 302 handles all communications between the various other software modules, and all communications outside MDRC 206. Here, interface module 302 provides the interface for communicating with ATM switch 202C. Interface module 302 is implemented as conventional input/output and

control routines. Interface module 302 is shown in FIG. 3 primarily for purposes of illustrative clarity—those skilled in the art will recognize that interface module 302 could have been omitted from FIG. 3, as these are functions performed by all software routines, and can be assumed to be part of any software implementation.

5           Peer group leader module 308 causes ATM network 102 to elect MDRC 206 as peer group leader. According to standard ATM technology, a peer group leader is elected for each peer group. This insures that all request for routing in that peer group are directed to MDRC 206. In a preferred embodiment, peer group leader module 308 arranges to win this election by broadcasting an  
10           artificially higher preference for MDRC 206. However, those skilled in the art will recognize that there are many alternate approaches to having MDRC 206 elected peer group leader.

          Another alternate approach is to manually configure ATM network 102, assigning MDRC 206 as peer group leader. In this approach, peer group leader  
15           module 308 no longer is necessary to insure that MDRC 206 is elected peer group leader. However, those skilled in the art will recognize that other functions may still need to be performed according to ATM protocol, such as periodically broadcasting "keep-alive" packets to all members of the peer group.

          Referring now to FIG. 4, flowchart 400 illustrates the operation of ATM  
20           network 102 according to a preferred embodiment of the present invention, including the operation of MDRC 206. These steps will be described in the context of the example outlined above, where client 104A wishes to contact a server capable of providing a particular service, such as authorizing a credit card purchase. For purposes of this example, assume that servers 106A and 106B are  
25           included within a functional group which provides this service. Assume that client 104A has sent a request for connection to ATM switch 202A specifying



this functional group. Further assume that, prior to the request for connection being sent, peer group leader module 308 has caused MDRC 206 to be elected peer group leader of the peer group including ATM switches 202A, 202B, and 202C.

5                   In step 404, ATM switch 202A receives a request for connection from client 104A, as mentioned above. Since the functional group address does not belong to any actual physical device, ATM switch 202A cannot itself determine a route to establish a virtual circuit. Following conventional procedures of PNNI, in step 406 ATM switch 202A sends a routing request to the peer group leader,  
10                   which in this case is MDRC 206, requesting a route to the functional group address.

                  Interface module 302 receives the routing request from ATM switch 202A, via ATM switch 202C. As peer group leader, MDRC 208 must handle all PNNI routing requests from the peer group, both those specifying a functional  
15                   group address, and those specifying a conventional ATM address.

                  Routing module 304 determines routings through ATM network 102 according to conventional ATM technology. For instance, routing module 304 can determine a routing between client 104A and server 106A. When a routing request is received specifying a conventional ATM address, routing module 304  
20                   determines an appropriate routing, and returns the routing to the requesting ATM switch 202, which then sets up a virtual circuit according to the routing.

                  However, routing requests which specify a functional group address are handled differently. Server module 310 maintains a list of the servers assigned to each functional group, including each server's individual ATM address. In a  
25                   preferred embodiment, the network administrator provides this list to server

module 310. Server module 310 also uses conventional techniques to automatically maintain this list by determining which of the servers are actually able to respond at any given moment. This list is updated periodically according to conventional techniques.

5           In step 408, server module 310 consults the list of servers and selects a server to service client 104A from the functional group specified in the routing request (and in the request for connection). Server module 310 can make this selection based on a variety of criteria, depending upon the particular network environment. For instance, the server may be selected based on proximity to the  
10           requesting client, network load, available server capacity, or other application-specific factors. However, server module 310 will not select a server which is known to be unreachable.

          In step 410, routing module 304 determines a route through ATM network 102, from client 104A to the server selected by server module 310, in this case  
15           server 106A. Again, this is a conventional function of PNNI routing. Routing module 304 need not deviate from conventional ATM practice. The computed route takes the form of an ATM designated transit list (DTL). As is well known to those skilled in the art, this is a list of ATM switches and communication pathways over which the new virtual circuit should be routed. The DTL is a  
20           standard PNNI message, well known to those skilled in the art. Referring to FIG. 2, an example route is from client 104A, through ATM switches 202A and 202B, to server 106A.

          In step 412, interface module 302 transmits the resulting route to ATM switch 202A as a DTL. In step 414, ATM switch 202A creates a virtual circuit  
25           through the route specified in the DTL. The request for connection will arrive at the selected server, server 106A, still bearing the ATM address of the functional

group. As stated above, according to the present invention each server must recognize its own ATM address as well as the ATM address of each functional group of which it is a part.

5 Now that a virtual circuit is established, client 104A may begin normal communications with server 106A in a conventional client/server manner.

10 It is important to note that the virtual circuit need not flow through multiple destination routing controller 206. According to conventional PNNI routing procedures, a DTL need not include the peer group leader within the chosen route. As a result, the peer group leader does not have to perform the functions of an ATM switch. MDRC 206 may therefore be implemented as a general purpose computer without the special capabilities of an ATM switch.

## **VI. Implementation of Multiple Destination Routing Controller**

15 In a preferred embodiment, multiple destination routing controller 206 is implemented as a general purpose computer system, described in detail below. In an alternate embodiment, multiple destination routing controller 206 is implemented using a special purpose computer system. In still another embodiment, the functions of multiple destination routing controller 206 are integrated into a conventional ATM switch, such as ATM switch 202. Those skilled in the art will recognize the various tradeoffs associated with each particular implementation.

20

Multiple destination routing controller 206 can be implemented using hardware, software, or a combination thereof and may be implemented as a computer system or other processing system. An example computer system 500 is shown in FIG. 5. Computer system 500 includes a communication bus, such

as communication bus 502, and one or more processors, such as processor 504. Processor 504 is connected to communication bus 502.

Computer system 500 also includes a main memory 506, preferably random access memory (RAM), and may also include a secondary memory 508. Secondary memory 508 may include, for example, a hard disk drive 510 and/or a removable storage device 512, representing a floppy disk drive, a magnetic tape drive, and optical disk drive, etc. Removable storage device 512 reads from and/or writes to a removable storage medium 514 in a well known manner. Removable storage medium 514 represents a floppy disk, magnetic tape, optical disk, etc., which is read from and written to by removable storage device 512. As will be appreciated, removable storage medium 514 includes a computer usable storage medium having stored therein computer software and/or data.

In alternate embodiments, secondary memory 508 may include other similar means for allowing computer programs or other instructions to be loaded into computer system 500. Such means can include, for example, a removable storage unit 522 and an interface 520. Examples of such can include a program cartridge and cartridge interface (such as that found in video game devices), a removable memory chip (such as an EPROM or PROM) and associated socket, and other removable storage units 522 and interfaces 520 which allow software and data to be transferred to computer system 500.

Computer system 500 includes a communications interface 524. Communications interface 524 allows software and data to be transferred between computer system 500 and the ATM network 102. Examples of communications interface 524 can include a modem, a network interface (such as an Ethernet card), a communications port, a PCMCIA slot and card, etc. Software and data transferred via communications interface 524 are in the form

of signals which can be electronic, electromagnetic, optical or other signals capable of being received by communications interface 524. These signals are provided to communications interface via communications pathway 204.

5 In this document, the terms "computer program medium" and "computer usable medium" are used to generally refer to media such as removable storage device 518 and hard disk installed in hard disk drive 510. These computer program products are means for providing software to computer system 500.

10 In an alternate embodiment, the invention is implemented using computer programs (or software). Computer programs (also called computer control logic) are stored in main memory 506 and/or secondary memory 508. Computer programs can also be received via communications interface 524. Such computer programs, when executed, enable the computer system 500 to perform the features of the present invention as discussed herein. In particular,  
15 the computer programs, when executed, enable the processor 504 to perform the features of the present invention. Accordingly, such computer programs represent controllers of the computer system 500.

20 In the embodiment where the invention is implemented using software, the software may be stored in a computer program product and loaded into computer system 500 using removable storage device 512, hard drive 510 or communications interface 524. The control logic (software), when executed by the processor 504, causes the processor 504 to perform the functions of the invention as described herein.

25 In another embodiment, the invention is implemented primarily in hardware using, for example, hardware components such as application specific

integrated circuits (ASICs). Implementation of the hardware state machine so as to perform the functions described herein will be apparent to persons skilled in the relevant art(s).

5 In yet another embodiment, the invention is implemented using a combination of both hardware and software.

## **VII. Conclusion**

10 While the invention has been particularly shown and described with reference to preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention.



***What Is Claimed Is:***

1           1.       A method for establishing a virtual circuit from a client to one of a  
2           plurality of servers through a network, comprising the steps of:

3                 (1)       receiving a request for connection from a client, wherein said  
4           request specifies a functional group, and wherein said functional group includes  
5           a plurality of servers, each capable of servicing said client;

6                 (2)       selecting a server from said functional group;

7                 (3)       computing a route to said server; and

8                 (4)       establishing a virtual circuit from said client to said server via said  
9           route.

1           2.       The method of claim 1, wherein said step of selecting a server further  
2           comprises selecting an operational server from said functional group which has  
3           the highest available computational power.

1           3.       The method of claim 1, wherein said client is a telephone switching  
2           system.

1           4.       The method of claim 1, wherein said network is an ATM network.

1           5.       The method of claim 1, wherein said network is a TCP/IP network.

1           6.       A system for establishing a virtual circuit from a client to one of a  
2           plurality of servers through a network, comprising:

3                 an interface module coupled to receive a routing request from the  
4           network, wherein said routing request specifies a functional group and a client,  
5           and wherein said functional group includes a plurality of servers, each capable of  
6           servicing said client;

7                   a server module configured to select a server from said functional group;  
8           and  
9                   a routing module configured to determine a route from said client to said  
10          server through the network.

1           7.       The system of claim 6, wherein said network is an ATM network.

1           8.       The system of claim 7, wherein said system further comprises:  
2                   a peer group leader module configured to cause the network to elect said  
3                   system as a peer group leader.

1           9.       The system of claim 6, wherein said server module is configured to select  
2                   an operational server from said functional group which has the highest available  
3                   computational power.

1           10.      The system of claim 6, wherein said server module is further configured  
2                   to maintain a list of functional groups within the network.

1           11.      The system of claim 6, wherein said client is a telephone switching  
2                   system.

1           12.      The system of claim 7, wherein each of said plurality of servers responds  
2                   to an ATM address for said functional group.

1           13.      The system of claim 6, wherein the network is a TCP/IP network.

1           14.      A computer program product comprising a computer useable medium  
2                   having computer program logic stored therein, wherein said computer program  
3                   logic comprises:

4 interface means for enabling a computer to receive a routing request from  
5 a network, wherein said routing request specifies a functional group and a client,  
6 and wherein said functional group includes a plurality of servers, each capable of  
7 servicing said client;

8 server means for enabling said computer to select a server from said  
9 functional group; and

10 routing means for enabling said computer to determine a route from said  
11 client to said server through said network.

1 15. The computer program product of claim 14, wherein said network is an  
2 ATM network.

1 16. The computer program product of claim 14, wherein said network is a  
2 TCP/IP network.

1 17. The computer program product of claim 15, wherein said computer  
2 program logic further comprises:

3 a peer group leader means for enabling said computer to cause said ATM  
4 network to elect said system as a peer group leader.

1 18. The computer program product of claim 14, wherein said server means  
2 enables said computer to select an operational server from said functional group  
3 which has the highest available computational power.

1 19. The computer program product of claim 14, wherein said server means  
2 further enables said computer to maintain a list of functional groups within said  
3 network.

1        20.    The computer program product of claim 14, wherein said client is a  
2        telephone switching system.

1        21.    The computer program product of claim 15, wherein each of said plurality  
2        of servers responds to an ATM address for said functional group.

1        22.    A computer, comprising:  
2                a processor;  
3                interface means for enabling said processor to receive a routing request  
4        from a network, wherein said routing request specifies a functional group and a  
5        client, and wherein said functional group includes a plurality of servers, each  
6        capable of servicing said client;  
7                server means for enabling said processor to select a server from said  
8        functional group; and  
9                routing means for enabling said processor to determine a route from said  
10       client to said server through said network.

1        23.    The computer of claim 22, wherein said network is an ATM network.

1        24.    The computer of claim 22, wherein said network is a TCP/IP network.

1        25.    The computer of claim 23, wherein said computer further comprises:  
2                a peer group leader means for enabling said processor to cause said ATM  
3        network to elect said system as a peer group leader.

1        26.    The computer of claim 22, wherein said server means enables said  
2        processor to select an operational server from said functional group which has the  
3        highest available computational power.

1        27.     The computer of claim 22, wherein said server means further enables said  
2        processor to maintain a list of functional groups within said network.

1        28.     The computer of claim 22, wherein said client is a telephone switching  
2        system.

1        29.     The computer of claim 23, wherein each of said plurality of servers  
2        responds to an ATM address for said functional group.

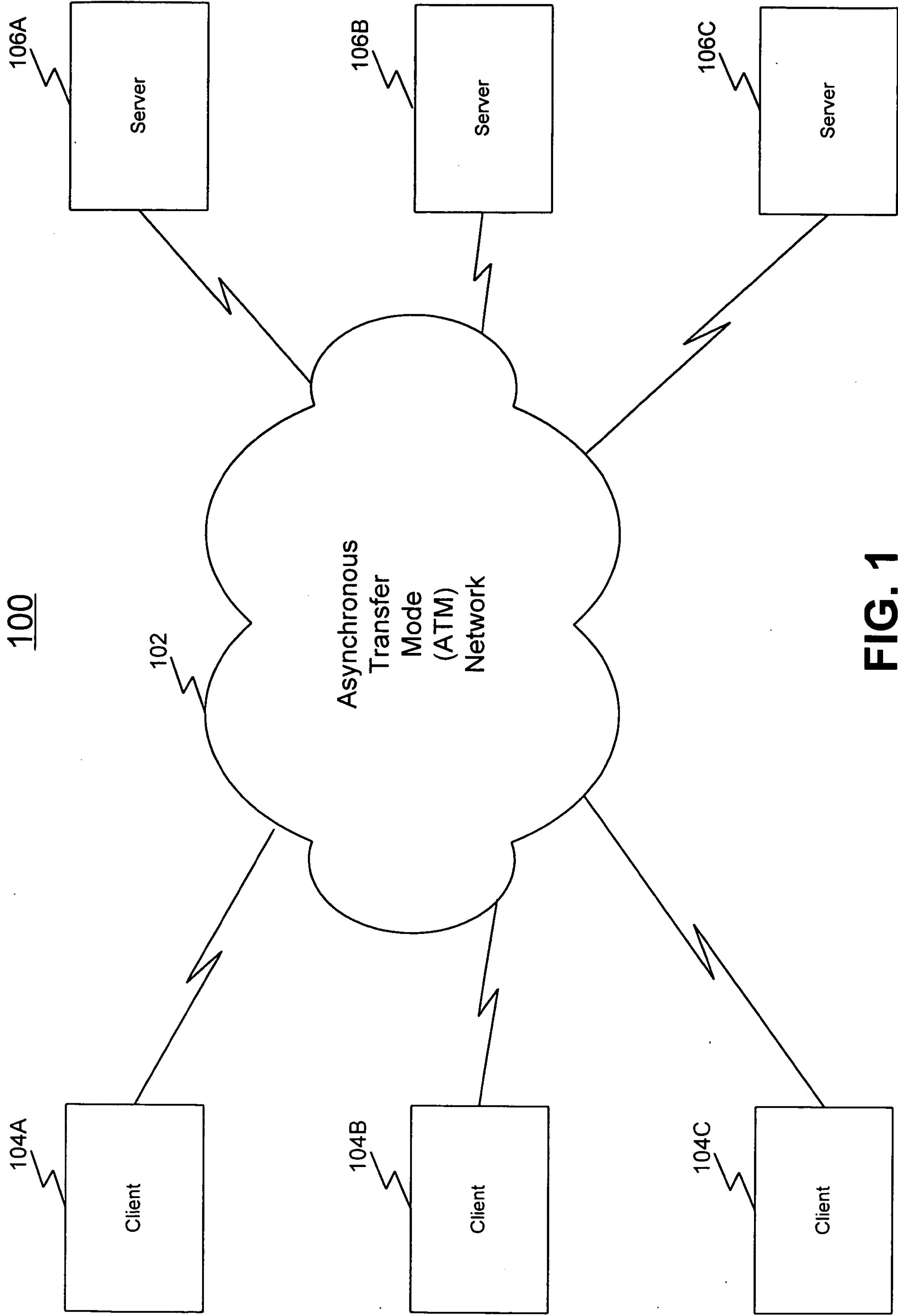
## **System and Method for an Origination to a Plurality of Destinations over an ATM Network**

### ***Abstract***

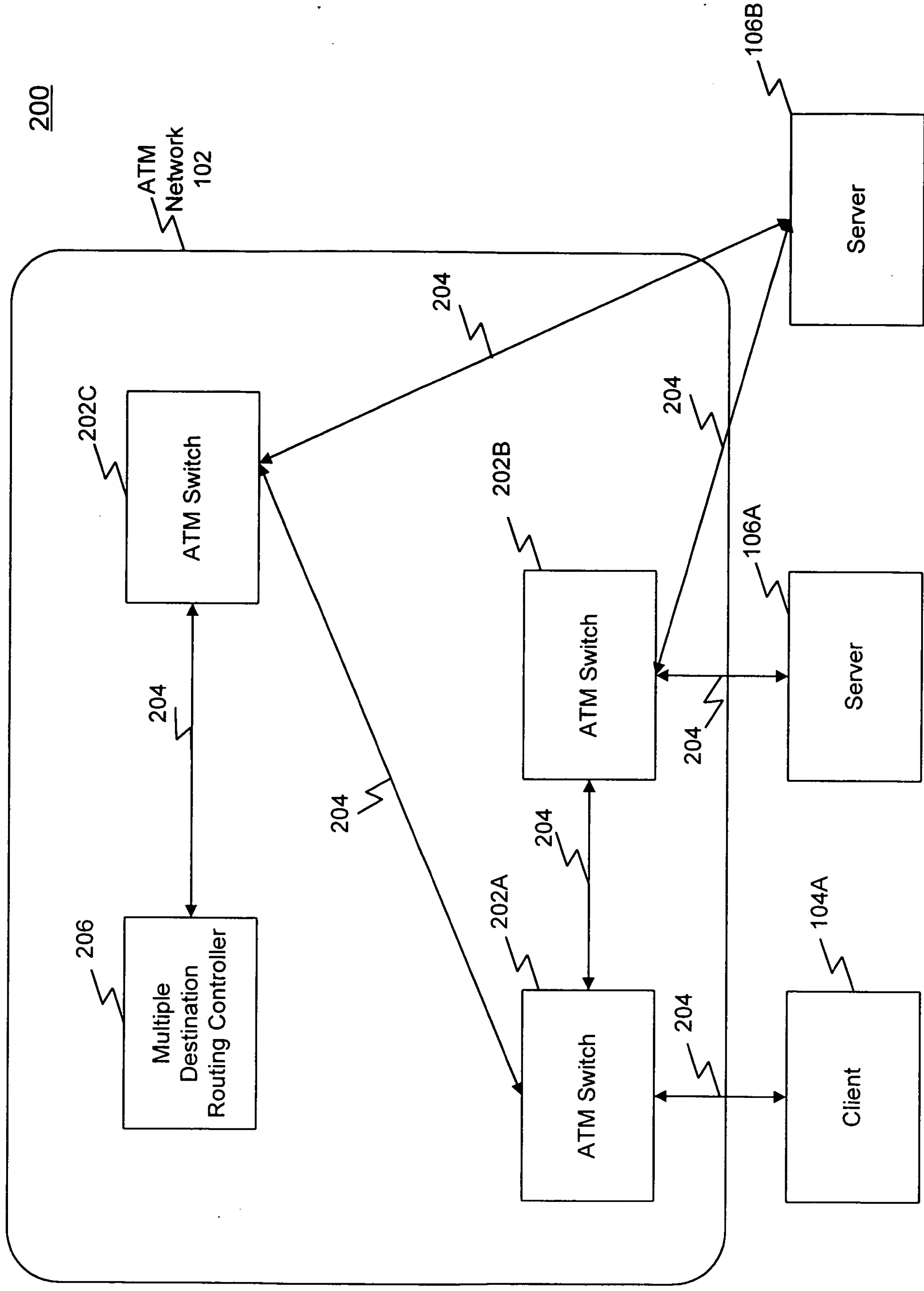
System and method for establishing a virtual circuit from a client, through an ATM network, to any one of a plurality of servers forming a functional group. The present invention operates as a peer group leader within the ATM network, routing virtual circuits when a routing request is received. The present invention  
5 selects an operation server from the functional group, computes a route from the client to the selected server, and returns the route in a designated transit list.

A148-03.WPD





**FIG. 1**



**FIG. 2**

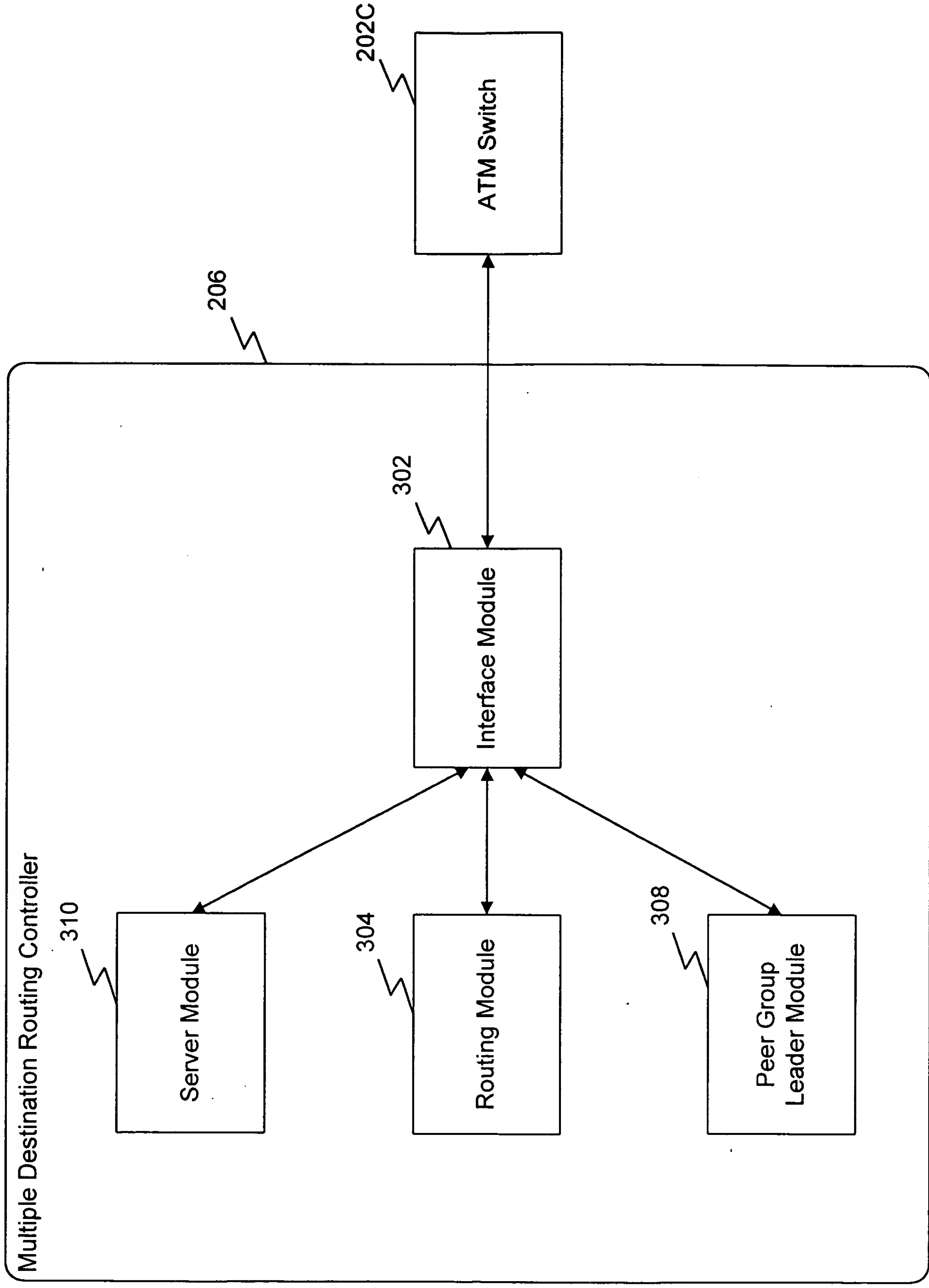
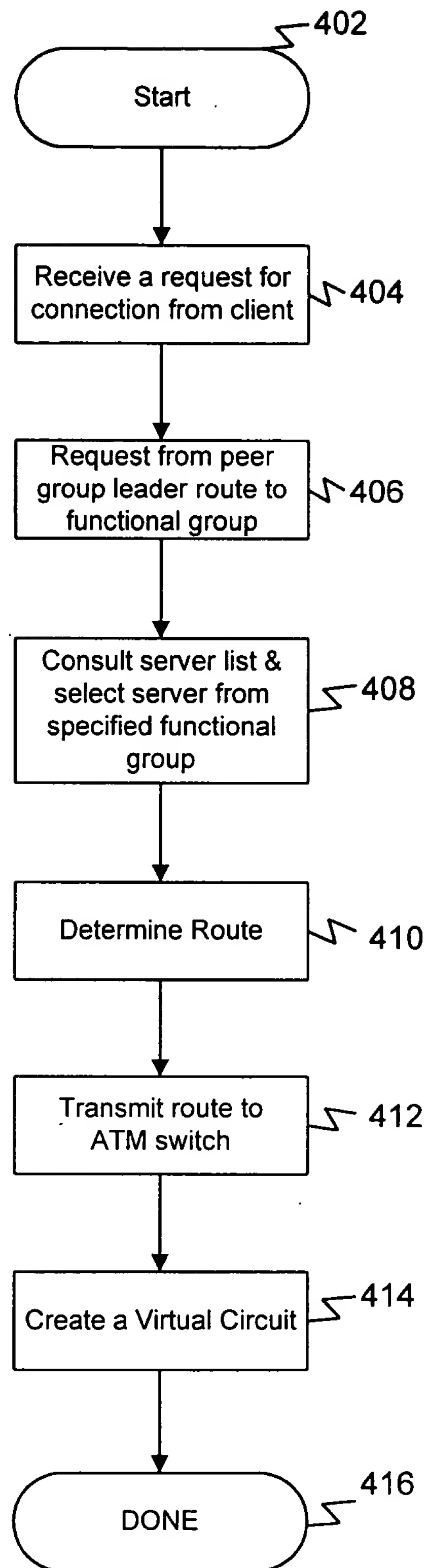
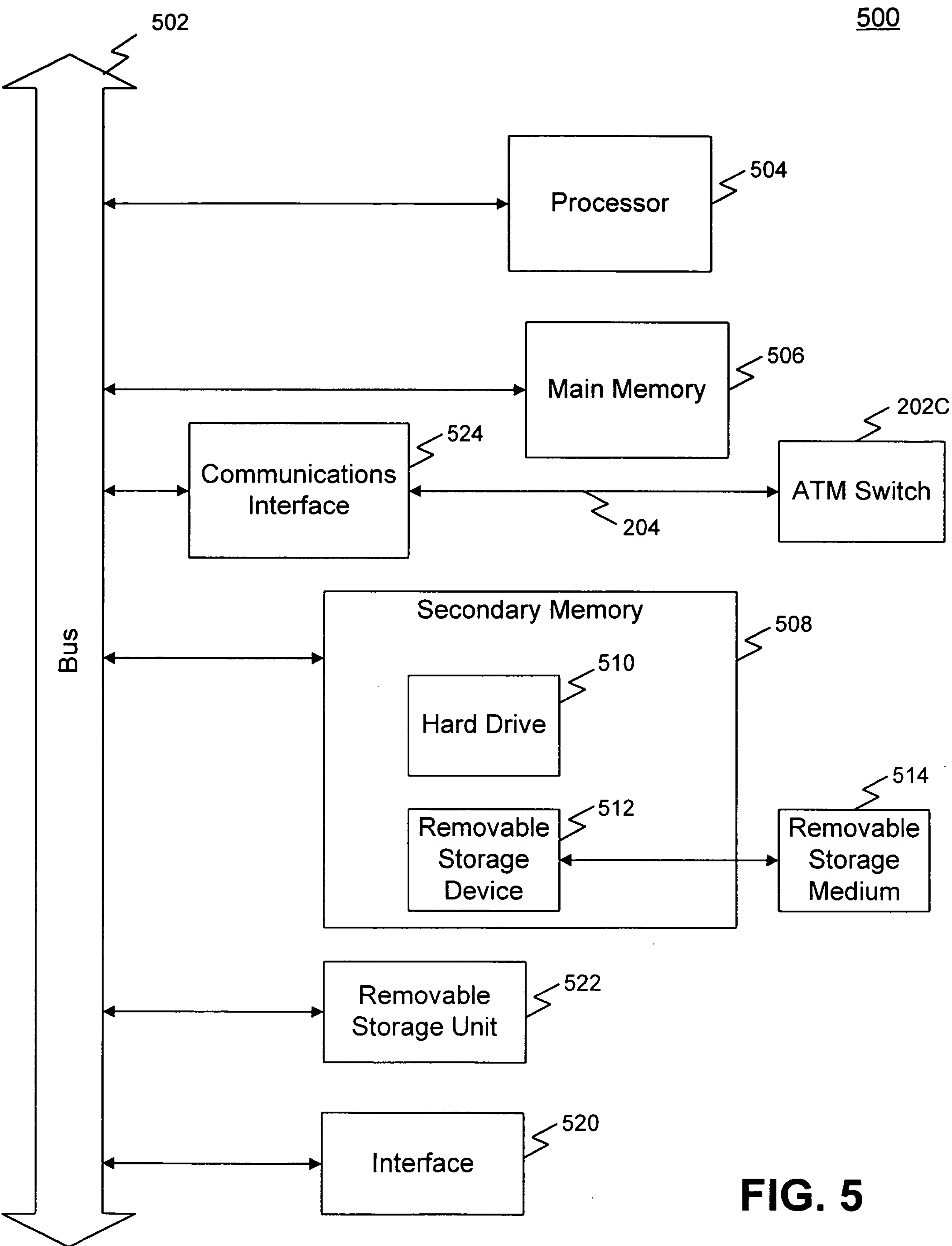


FIG. 3

**FIG. 4**



**FIG. 5**

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TITLE

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